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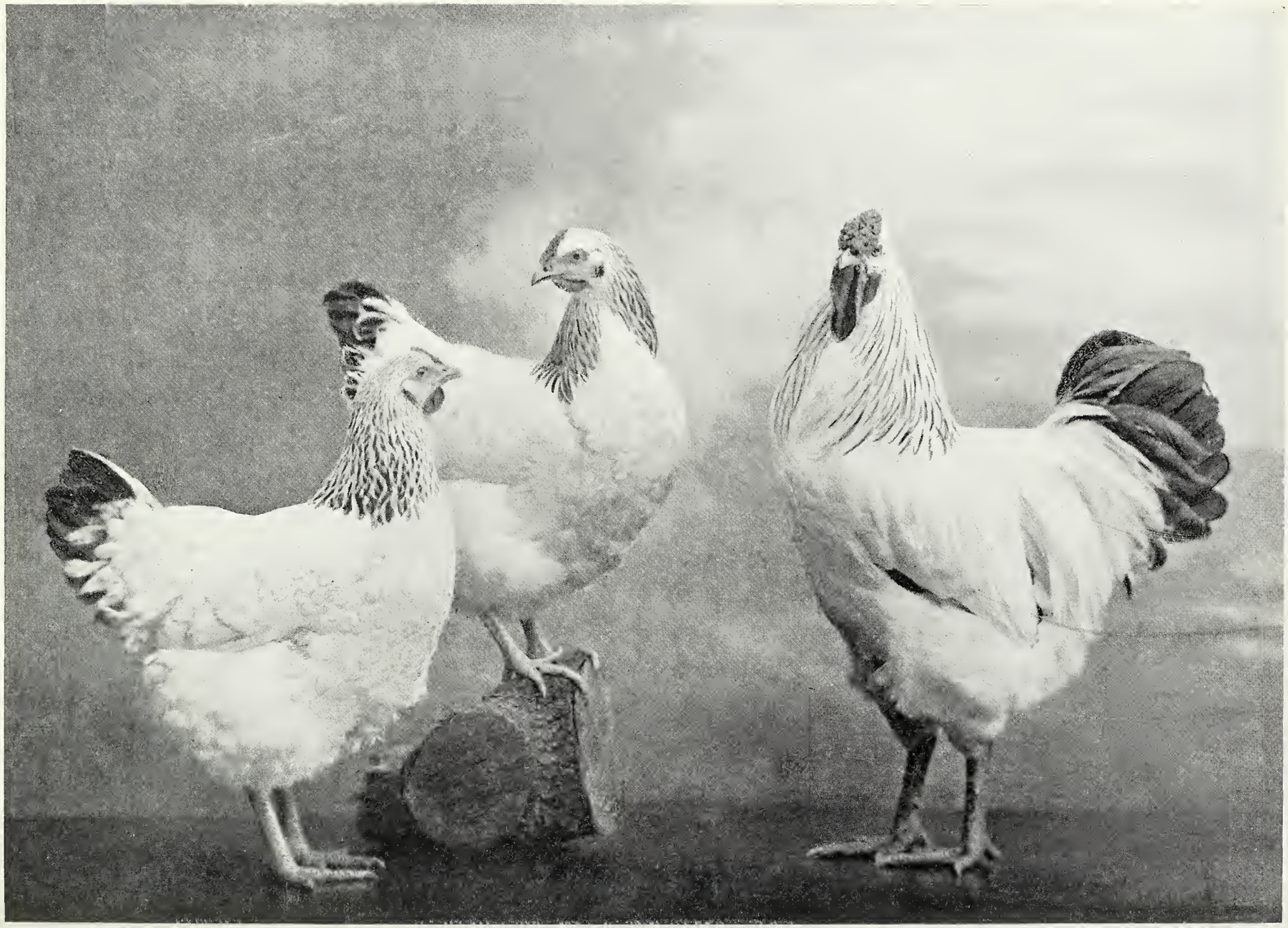

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OUR WINNING PRIZE PHOTOGRAPH: MR. O. HARDEE'S "COLUMBIAN WYANDOTTES.

THE ILLUSTRATED POULTRY RECORD

Vol. 1.—No. 4. January 1, 1909. Monthly Sixpence Net.

DIARY OF THE MONTH.

Fox-hunting and Poultry-keeping.

We have pleasure in printing this month the second instalment of "Home Counties'" careful contribution on the difficult subject of fox hunting and poultry-keeping. We had hoped to have concluded the inquiry in the present issue, but the number of valuable replies which have been received has made it necessary to defer until our February number the summing-up of the case for the Hunt, the statement of the case for the poultry keepers, and "Home Counties'" judgment on the facts. As it is most important that the subject should be thoroughly threshed out, we are certain none of our readers will grudge the space we are devoting to it. "Home Counties" has taken a great deal of trouble in conducting his inquiry, and his judgment is of a somewhat original character and will be read, we think, with much interest. It is written from the standpoint of one who understands the point of view of both hunting men and poultry keepers, and we hope sincerely that its publication will do something towards bringing about good working relations between the two. The difficulties which exist are surely not beyond the reach of tact, good feeling, and common sense.

The Twelve Months' Laying Competition.

It will be remembered that in the November issue we published an article on the twelve months' competition by Mr. Richardson, the manager, so that it is unnecessary to deal at all exhaustively with the official report, which was published the middle of December. The contest has proved a wonderful victory for the White Wyandotte. Five pens of this breed head the list as regards the money value of the eggs laid, though in mere numbers the Buff Plymouth Rocks would come third with 950 eggs against the 994 and 991 of the first pens of their competitors. The best numbers fall a good deal short of those achieved in Australia in another twelve months' contest which ended in April last. Then six White Leghorns, laying for the honour of South Australia against Queensland, recorded no fewer than 1,538 eggs, almost double the score of the winners of our English contest. We do not doubt, however, that the total value of the eggs in the nearest market was very slightly, if at all, in favour of the Australian Leghorns. The first prize of £3, gold medal, and first-class certificate has been awarded to Mrs. R. Dixon, the Worcestershire Poultry Farm, Tardebigge, Bromsgrove; second prize, £2, silver medal, and first-class certificate to J. Wrennal, Ollerton, Chorley; third prize, £1, silver medal, and second-class certificate to F. Baines, Corsham, Wilts; third prize, ditto, to H. L. Hewitt, Moorgate-street, E.C.

The Vindication of the White Leghorn.

The enigma of the competition was the non-success of the White Leghorns; 630, 670, and 671 are such poor totals that one wonders at the smallness thereof; 843, achieved by the other pen, is better, but it is 200 fewer than the winning pen of Wyandottes and only gains the tenth place. Their miserable performance during August and September, an aggregate of 158 eggs from 24 birds, mainly contributed to this result. Eight birds did not lay a single egg during these two months, while three of the number added July also to their holiday period. If the White Leghorn has been unlucky in this country, it is achieving wonders elsewhere. In the preceding paragraph we show what they accomplished in Australia, and last week's South African mail brings

still more striking evidence of their laying powers. The Western Province Agricultural Society is conducting a laying competition, which is now half way through, the outstanding feature of which is the extraordinary success of the White Leghorn, which occupies first, second (two pens), fourth, fifth, seventh, and eleventh places on the list of twenty-two pens. Perhaps more remarkable still is the fact that Mr. Van Breda, with three pens of White Leghorns, holds the first, second, and fourth places.

How to Judge Poultry.

One cannot help feeling amused at some of the letters written by fanciers, complaining of the (to them) unsatisfactory judging at certain shows. Many of them advance the idea that the American system of points judging would do away with all the trouble, and the other day we noticed that a gentleman seriously advocated the desirability of compelling judges to place a card upon each pen, detailing the number of points allowed for the various characteristics. No doubt the person who desired to see the adoption of such an innovation did not take into consideration the heavy work already allotted to our judges, and was unaware that even if the points system of judging were adopted there would not be an end to dissatisfaction among a certain number of exhibitors who did not win. Whether by points or the comparative system, judging is only a matter of opinion, and just as it is difficult to get two or three judges to agree as to the relative merits of certain birds, so would there be the same difficulty in coming to an agreement as to the allocation of points by the much-vaunted score card system.

Telephonic Intercommunication.

Great have been the advances made within recent years in respect to postal, telegraphic, and telephonic privileges. The first named are practically within reach of all, the second are available to many, but not in rural districts to the extent we could desire, whilst the third are denied to the great mass of those who live in the country. That is not so elsewhere. In Denmark and Sweden nearly every village has its telephone exchange or call office, and vast numbers of farmers are in direct connection with the outside world through the 'phone installed in their own dwellings. The same is true in America. The advantages are enormous, the time saved is incalculable, and frequently a message taking but a minute or two will save hours in accomplishing a piece of business, and often adds more than its cost to direct gains. Why then are our farmers and others not in the same position as their rivals abroad? The answer is that it is partly their fault and largely their misfortune; their fault because of unwillingness to advance with the times, and their misfortune because of the high charges imposed, due to monopoly. In Denmark and Sweden the charge for local service is only £3 per annum—here it is twice that sum, when available.

A Perennial Subject.

Until recently the question of the due relation of the ornamental to the utilitarian qualities of fowls, which has agitated breeders on this side, did not appear to command any serious attention in America. But of late the signs are that it is forcing itself forward, which is due to the increase of the *genus* fancier. That was to be expected. With the growth of the exhibition system and the increase of breeders who care all for externals and are prepared to sacrifice usefulness, the question was bound to make itself felt. It is not our present purpose to discuss it, as to do so would demand considerable time and space, but simply to record a fact. We are led to do so by a most interesting and suggestive article entitled "Place of the Fancier in Poultry Culture," appearing in a recent issue of *Farm Poultry*, which we should have liked to quote were it not for the length. Reference is made to Dr. John Bascomb's book, "Æsthetics; or the Science of Beauty," in which it is said that "the plant does not live for beauty, but in beauty"—a sentence which should be written up by poultry breeders everywhere. *Farm Poultry* well says:

> A rational standard of beauty in fowls is a description of the most perfect and most useful type of fowl for the purpose for which a breed or variety is designed. The ideals by which rational standards are reached are reasonable ideals—not fanciful. A breeder looking at a fowl lacking in breast development can give a substantial reason why it would look better, as well as be better, if more developed in that section. There is something lacking there. It can be demonstrated, even to the least fanciful and most obtuse mind, that enlargement in that section would mean improvement, and incidentally add to the beauty of the fowl.

The Late Rev. F. Cooper.

A charming personality and sterling fancier has been lost to us by the death of the Rev. Frank Cooper, who for just over thirty years was vicar of Lea Marston, near Birmingham. As a poultry keeper he has been prominent for a number of years in Game Bantam circles, and though he seldom exhibited his birds he was a regular attendant at the Crystal Palace show, where on many occasions he officiated as judge, and at other times exhibited his pets with much success. Of a retiring disposition, he was highly respected by his fellow fanciers and beloved in his own parish. He was to have judged the Game classes at Polesworth on November 27, but his illness prevented the fulfilment of this engagement, and a few days later he passed away, the news of his death reaching his friends in the Fancy at the Birmingham show.

Portable Education.

Our American exchanges have recorded at various times the equipment of educational trains, for the purpose of lectures and demonstrations at points not usually reached. In Maine a Poultry School of this kind was organised two or three years ago, and another more recently in Missouri. The last to be noted is in New York State and was organised by Cornell University. The train was due to the suggestion of Mr. Luis Jackson, Industrial Commissioner of the Erie Railroad, which company generously provided engine, baggage car, restaurant car, and three lecture coaches, in which latter the various lecturers provided by the University, inclusive of Professor J. E. Rice, whose addresses on "Four Important Factors in Farm Poultry Management" were highly appreciated, gave their talks and demonstrations. The plan adopted was to advertise well the visit in advance, and to stop for an hour at a fixed point, then go on to the next. In this way as many as 3,000 hearers were secured in one day. Here is an example which some of our great railway companies might well copy, and it would pay them to do so, more especially in the more remote districts. There are many sections of this and other countries specially suited to such an enterprise. We suggest that the Great Western Railway Company might try it in Cornwall, the North Western and the Midland in Wales, the Great Eastern in Norfolk, the Highland in Scotland, and the Midland Great Western in Ireland.

Rings for Chickens.

The marking question has by no means been settled, to judge by the remarks one hears made by prominent breeders and the discussions that are going on in the clubs. A definite step has been taken by the Partridge Wyandotte Club, which, at a recent meeting, passed a resolution to the effect that all birds entered in the open pullet class at the club show for 1909 shall wear the conference ring. There is a special reason in this case, because Partridge Wyandotte pullets improve greatly after an adult moult, and for that reason there is ground for believing that birds have been exhibited, which were not really pullets according to the strict letter of the law, as it originally stood in the Poultry Club's regulations. The resolution adopted by this club is of an experimental character, but it is designed with a view to encouraging the ringing of young birds, and if it is found to be a success, its scope may be extended another year. We must always bear in mind that universal ringing would entail a hardship upon the amateur and novice fanciers, and that is the very thing which this club seeks to avoid, whilst putting a stop to the exhibiting by the more advanced breeders of birds that are of doubtful age.

Possibilities of Egg Production.

The exuberance of our Australian correspondent, to whose interesting article we call attention, is very fascinating, but his anticipations of the future should be read side by side with the lugubrious records of the Maine Experiment Station's results published in our October issue. It is not our desire to discourage efforts for progress. A large share of imagination, and what at first sight might appear unjustifiable anticipation, means striving for greater things. But there are factors to be reckoned with, which compel our attention, natural factors we mean, and we can only suggest to our Australian friends, whose efforts are watched with the keenest interest and sympathy on this side, without any jealousy or rivalry, that all may not be quite so roseate in reality as they seem. Probably they will find, as we have done and the Americans have realised, that the truth is midway between extremes. The Australian climate is a great help, we firmly believe, but even there are to be found limitations. As we warned our readers not to be discouraged by the failure of the Maine records, so we ask them not to be unduly exalted by the Australian results.

International Agricultural Institute.

Reports have been published of the opening of the International Agricultural Institute at Rome, where a magnificent palace has been generously erected for its accommodation by the King of Italy. The *locale* is in the beautiful grounds of the Villa Borghese, just without the Porto del Popolo, and opposite the Pincian Hill, where the great Poultry Exhibition was held a few years ago. Each country represented at the institute has its own set of rooms, which are decorated with its national arms. It is intended that this institute, which can have no more fitting abiding place than the City of Seven Hills, shall be of practical value to agriculturists in all countries, gathering into one focus for dissemination the knowledge and experience of all. We understand that poultry-breeding and production will receive a due meed of attention, and hope to see some definite results therefrom. Upon what line developments will take place it is too early to form an opinion, as the first duty was to lay the foundations upon which the superstructure is to be erected.

The Making of a Laying Strain.

The decade in which we are now living should be termed the statistical age. Birds are advertised and sold to-day either on the strength of their own achievements or on the record of their parents. Hitherto this has only been true of exhibition stock, but now buyers of utility birds require, and rightly so, to know something as to the fecundity of the strain which they are introducing to their yards.

Many breeders trap-nest their birds and, by selecting only the best layers for the reproduction of the stock, in this way build up a pedigree laying strain, but the question arises whether this result is all sufficient. 'Tis true that utility hens are in a sense but egg machines; still it is necessary that they should be able to throw strong, healthy chickens for the maintenance of the race. We have seen the records of a Plymouth Rock pullet which laid 310 eggs in twelve months, but not a single one produced a chicken. Race decay under natural conditions is rapid, but under artificial surroundings this degeneration is enhanced; therefore precautions should be taken so that the increase in egg production is not brought about by a decrease in the vitality of the germs of the fertilised eggs. We believe it would be an advantage if all egg-laying charts were so designed as to give detailed results, not only as to the number of eggs produced by each hen, but also as to the fertility and hatchability of those eggs.

Our Photographic Competition.

Mr. Hardee's "Columbian Wyandottes," the winning picture in our Photographic Competition, which closed at the end of last November, is given as the frontispiece to this issue; and we venture to hope that, representing a comparatively new variety of a favourite breed as it does, and being excellent in grouping and workmanship, it will prove a popular choice. The other entries for the competition were plentiful, varied, and on the whole decidedly above the average one might expect, considering the unfavourable time of year for this branch of photography. At the same time we must confess that some of the unsuccessful prints were disappointing in that their authors seemed to have little or no idea of what would be interesting to readers of this journal in regard to subject, and to be without the technical proficiency that is essential to the making of a successful picture. The fact is that more than ordinary patience is required for this class of photography. Very few birds—if an "all-bird" subject be chosen—are good sitters in the portrait sense of the word. Very few groups of poultry—if a group in a natural outdoor setting is the subject—will be obliging enough to walk into just the right spot and dispose themselves in just the right order for the snapshotter. Against the difficulties of fowl photography may be set the joy of the unblemished result; and we may add that if this result sometimes takes days of repeated effort to achieve, it is also capable, through a combination of favourable circumstances, of being arrived at in a minute. We hope that the latter consideration will encourage those who did not succeed this time to try their hands and cameras again when, as we hope to do, we revive the competition in the near future.

The Crisis in the Near East.

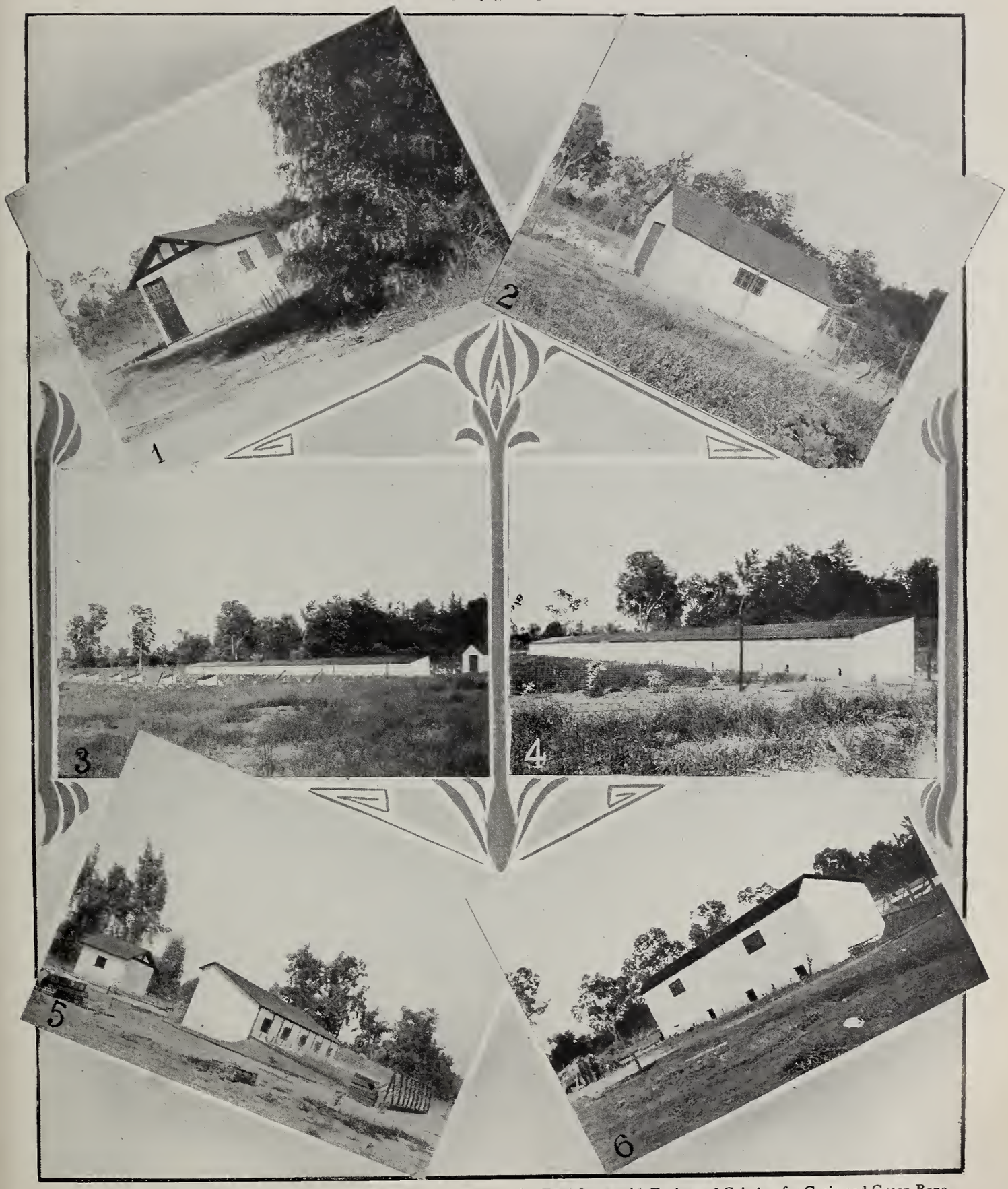
Among the many persons whose interests will be affected if the threat of war in the Balkans develops in earnest in the spring will be the English poultry keeper, as, almost unknown to the general public, a considerable trade is done between this country and the Balkan States in eggs, poultry, turkeys, and geese. Servia sends us supplies of eggs, which help to meet the demand for cheaper grades, and large quantities of poultry and turkeys, which tend to flood our markets and consequently to force down the price of inferior home-produced goods towards their own low level. Bulgaria sends here about £12,000 worth of eggs and Roumania has begun to export to us also. If all these small States are embroiled with their big neighbours and among themselves, their producing powers will be very greatly curtailed, if not temporarily destroyed, and no doubt the English market will not be long in feeling the effects of the shortage, with a consequent appreciation of price all round for the inferior qualities; although it must be remembered that in these grades alone is the English poultry producer likely to be affected, as the best qualities of home-grown poultry and eggs are practically untouched by foreign competition, and have little to gain or lose by a marked decrease or increase in the supplies from abroad.

Cement Plaster Houses.

The series of photographs given herewith, which we owe to the courtesy of Mr. O. M. Robertson, of Arlington, Riverside, California, show a new class of material coming largely into use in the Western States of America for the building of poultry houses. It consists of what is known as cement plaster, by which we suppose is meant a form of cement, which can be laid on to ordinary laths nailed to the ordinary framework of the building. That it has many advantages we do not doubt, among which would be durability, resistance to extreme heat and cold, and absence of harbourage for parasites; and from the fact that these erections are increasing to a considerable extent in California and Oregon it may be expected that they are not unduly expensive. Upon these points we hope to secure further information. The chief disadvantage would be want of portability, and therefore the material appears to be only suitable for fixed houses. It must be remembered that in the United Kingdom the greater part of our farms are rented, not owned by the occupiers, and consequently permanent structures are not generally seen. The tenant wisely prefers to employ houses which he can remove should he vacate his occupation.

MR. ROBERTSON'S RANCH, CALIFORNIA.

[*See page 210.*]



1. The Office.
2. Feed Store, with Engine and Grinders for Grain and Green Bone.
3. Laying House and Colony Coops.
4. Laying House, 200 ft. long.
5. Brooder House and Office.
6. Brooder House.

FOX-HUNTING AND POULTRY-KEEPING.

II.

An Inquiry into the Facts.

By "HOME COUNTIES."

Author of "The Townsman's Farm," "Poultry-Farming: Some Facts and Some Conclusions," "Country Cottages," "The Case for the Goat," &c.

SINCE the first instalment of this article appeared last month I have been favoured with some additional data from hunting men. I propose, however, to proceed in order with the questions in the ILLUSTRATED POULTRY RECORD circular and the answers to them, taking account of any additional replies when the time comes for summing up what seem to be the facts of the case. Comment and criticism will also be reserved, as before, for that stage.

Are the Hunts Victimised?

The question addressed to the Masters of Hunts, which we have now reached, is number four. It dealt with the delicate matter of fraudulent claims. Are the Hunts victimised? If so, to what per cent.?

Only two Masters answer the question with "No." One says, "Not very much." Another writes "Undoubtedly." A third says, "Not to any great extent." A well-known Master puts the matter this way: "There are, I suppose, in all walks of life some people who endeavour to take all the advantage they can of others, but I am happy to say that in our country we perhaps suffer less than most."

Now for the other side of the picture. "Though many farmers do not claim," writes a correspondent, "some small people make a practice of it. I have even had cases where on investigation no poultry was found to be kept at all. If we say the false claims come to 20 per cent. they are balanced by the claims not made."

Another correspondent says, "Certainly, many exaggerated claims are made."

An interesting reply is that of the Master who simply states that £1,500 is paid per annum, and that the claims represent 12,000 head of poultry!

A well-known public man, who is a Master of Foxhounds, writes:

> A great many poultry keepers ask for compensation for a great many more head of poultry than they have lost in the hope of getting part of it; while in some cases we have clearly proved that where men have been in straits for money they have sent in claims for poultry that have never been lost at all. These things are incidents of human nature, and it would serve no purpose to publish them. Neither would it obviously be wise to publish the scale on which claims are paid here. It is obvious that if we always paid the full value of pure-bred or prize birds all poultry lost would become such birds in the case of some claimants; while if we even paid the full market value, little care would be taken to prevent the fox from taking them, as it would be easier to claim for them than to send them to market. But though I write this I do not wish to insinuate anything against our excellent poultry keepers, who put up with a good deal of annoyance sometimes, and whom we do our best to save from heavy loss by paying compensation as close to the full value as is possible, in view of the circumstances that I have named.

A final letter is as follows:

> Certainly I think the Hunt is victimised in the matter of claims by a certain class of people, small holders, and especially small freeholders, being the worst offenders. They keep poultry which they allow to stray in every direction. These are seldom, if ever, shut up at all. In nine cases out of ten they either possess no hen house, or if they have one it is only a tumble-down shed into which any fox or other animal of prey can easily get. Their hens are allowed to sit out on eggs in hedges, or anywhere, unprotected, and then when a fox takes a sitting hen or one or two out-roosting fowls, they make a long claim not for what they actually know has been taken but for what they imagine must have been taken during the last six months or more. As they never shut up their fowls or count them regularly, they can never know how many they possess, and always imagine they should have a great many more than they ever owned. This class of person I find makes a claim generally at regular intervals, and often the claim is accompanied by a threat to destroy foxes or put up barbed wire if it is not settled. Then, too, with this class of person, one often finds that as soon as you pay them you receive claims from their nearest neighbours. They may, of course, be genuine claims, but I often doubt it.
>
> Against this, however, one must put the bigger farmer or holder of land, who keeps a fair stock of poultry and looks after them. He is bound to lose some, but he says he always reckons on that, and he makes no claim. So really the one class balances the other.

* * * * *

The Fox Population.

It is obviously of some importance to know what is really the number of foxes in some hunting districts where poultry are kept. This is a point on which I need hardly say it has been difficult to obtain information from the Masters. Several of them have been quite frank as to the reason. "This

is a delicate private matter of the committee," one explains, "from which a conclusion could be drawn as to the number of foxes which would be very unwelcome." But a number of Masters say simply that they do not know the number of foxes in their country, or that it is impossible to tell.

On the other hand, one Master states that he has from sixty to eighty foxes at the beginning of the season in a district of about 250 square miles. Another says "between a hundred and twenty and a hundred and forty brace have been killed for the last three or four years." This in a country about thirty miles long by twenty-eight wide. In another country, twenty by twenty-four miles, there are supposed to be about thirty brace of foxes, but "fifteen brace are killed per annum." Another hunting area is 160 miles square, and is supposed to contain "possibly over a hundred foxes at the beginning of the season." A country forty by fifty miles is said to be "in most places well stocked with foxes." The statement of another Master as to a country of roughly three hundred square miles is that "we are well stocked nearly everywhere."

* * * * *

Hunting Men's Views of the Poultry Keeper's Case.

In question six I endeavoured to state the case of the poultry keeper for the consideration of Masters of Hunts.

> It is essential to profitable poultry-keeping by agriculturists (I wrote) that the birds shall be scattered about the farms over as wide an area as possible; that to fasten up the houses in all the fields every night and to open them at daybreak means a great deal of labour, and in summer the birds are deprived of the "early worm," while, where foxes are about, early opening of the houses is risky. Commercial poultry-keeping on farms is not always possible in pens. It is also contended that the compensation paid by Hunts is sometimes inadequate.

One Master replied that he fully understood the poultry keepers' case, but that, in his experience, the poultry houses were shut up at night.

Another frankly acknowledged that my statement of the case "practically told against every Hunt."

A third declared that he had very few complaints as to the inadequacy of the payments made. If any complaints were made he visited those who made them. "One visit," wrote this careful student of human nature, "is worth a dozen letters."

A fourth Master quoted his own experience: "I have kept poultry on the farm for twenty years, surrounded by foxes, and have lost only two lots in all that time. They are looked after well. Many losses of poultry put down by their owners to foxes are due to some other cause."

A fifth took the view that "if poultry is not shut up at nights it is as liable to be killed by cats, stoats, &c., or in populous districts stolen, as made away with by foxes."

"If poultry keepers will take trouble," wrote a sixth Master, "I see no reason why foxes and poultry keepers should disagree, but, of course, poultry must be shut up."

A seventh expression of opinion was as follows: "Our farmers have their fowls in the fields, and, when distant from the homestead, they are penned up at night. I have never heard of the complaint of insufficient compensation being paid to the farmer. If this has happened it has been through a claim not being made at the time and the committee having been unable to investigate it."

The Master of a popular hunting country writes: "There is no doubt that if poultry are let out at daybreak or left out all night they will certainly be picked up. If poultry keepers would let their poultry out at, say, eight o'clock and shut them up at dark they would not lose very many."

"I have talked to many poultry keepers," says an eighth Master, "and they say that if sufficient care is taken not many fowls are lost."

A well-known Master believes that "the four-legged fox is often held responsible for the ravages of the two-legged fox, sometimes called gipsy and sometimes tramp."

Yet another Master writes thus:

> I agree that the extra labour entailed in having properly to fasten up and let out poultry at a proper time may seem, especially where pens are scattered over a farm, a waste of labour and hard on the poultry keeper. But if poultry are worth keeping at all, surely they are worth properly attending to and taking care of. There are many enemies to poultry besides foxes, such as dogs, cats, and other depredators, that can take full advantage of fowls not being shut up at night, or being let out too early on a foggy morning. This may especially apply where fowls are kept on farms close to a town or near to a colliery district.
>
> As to compensation given by Hunts being inadequate (this correspondent continues), this must in a measure be governed by the amount which the Hunt can afford to put aside for the purpose of payments for poultry losses and damage. And when claims are made, the claimants should bear in mind that, although their own claim is of all importance to themselves, the Hunt is obliged to deal with scores of other claims made from all over the country hunted by them. Also I think that some account should be taken by farmers and poultry keepers of the benefits that must accrue to them either directly or indirectly from the upkeep of a pack of hounds, and of the establishments of persons who hunt with them, in the district in which they live.

* * * * *

The Outlook.

In the letter of my last-quoted correspondent the subject of my final question is touched on. In that question I asked the Masters: "In view of the probability of an increase in poultry-keeping in this

country, what is your personal view of the question of fox-hunting and poultry-keeping ?"

One correspondent kindly went into the matter rather fully :

> I cannot think that in this country poultry-keeping can go on increasing to any very large extent. A portion of our country, I should say, is not adaptable for the rearing of poultry for market in any large quantities, owing to distance from market and poor railway service to large towns. But no doubt the question of payments by Hunts, not only for poultry losses but for damage, &c., becomes year by year a more serious question, and one which can only be met by making hunting people realise that they are likely to have to pay more for their fun in the future than they have done in the past. At the same time, payments for damage to poultry should not be made indiscriminately, but claims should be thoroughly investigated by some member of a poultry fund committee or someone appointed by the Hunt to act in such matters ; and claimants should be made to see that if they are to get compensation from the Hunt they must be able to show good evidence of the fowls having been killed, and that a fox is really the culprit. Insist on claims being made as soon as the loss is found out, and investigate them at once, and there should be no difficulty, when the case is a genuine one, in a settlement being arrived at between the poultry keeper and the Hunt's representative ; but there is always bound to be a certain amount of give and take in such matters ; some claimants are satisfied with anything within reason, and some would not be satisfied if you gave them all they claimed, because they would at once blame themselves for not having asked for double the amount they mentioned.

Another Master puts the situation in this way :

> As motor cars are daily increasing it will be a bad day for the English farmer and for many industries in local towns and villages when hunting ceases to be enjoyed as a sport and has to give way to poultry keepers. The day that hunting ceases in this country thousands of pounds which are spent yearly in the country will find their way to foreign places, and those to suffer in consequence among many others will be the farmers, horse dealers, saddlers, tailors, cap and hat makers, spur makers, farriers, veterinaries, &c., to say nothing of employment to true British subjects.

A third Master thinks that "there are not enough foxes seriously to interfere with poultry-keeping."

"If all England is turned into a chicken ranche," writes a fourth correspondent, "eggs and poultry will be so cheap that no one will make any money by them ; and it will not only be impossible to keep foxes, but all the partridges will disappear as well, as the hens will have tainted the ground and eaten the food, and the same will happen with the pheasants to a certain extent. I certainly think that the countryside will be much worse in consequence. Actually I see no increase in poultry on the whole."

One Master believes that "there must be give and take on both sides. The Hunt must meet the claims as fairly as possible, but it must be borne in mind that hunting people in the district are some of the best customers of the poultry keepers."

The head of a famous Hunt thinks that "fox-hunting and poultry-keeping can easily go on together. Tact and consideration for the losers, if they are *bona-fide* losers, is all that is required."

Another Master puts the same idea more briefly : "A question of tact and fairness."

One of my authorities, who does not think poultry-keeping is increasing, sees "no reason to fear any bad feeling between the parties."

Yet another is of opinion that "an increase in poultry-keeping will not affect fox-hunting." Then there is a correspondent who thinks that "an increase will do no good to hunting."

A Master who has some fame as a politician writes :

> My general view is that farmers in a hunting country know that fox-hunting brings them a market for corn, straw, hay, &c., which they would not otherwise have ; keeps wealthy men living in the country during the winter months, who employ a good deal of labour, which causes the spending of much money in the country, which otherwise would be spent elsewhere. They therefore realise that though sometimes annoyance results, they would be very foolish to do anything to stop hunting. They are, therefore, in the great majority of cases, content to keep their poultry protected at night from the foxes, and to accept the compensation offered them—to which, of course, they have no legal right—but which is given them purely by the goodwill of those who realise how much fox-hunting owes to farmers in every direction.

The subject is also discussed at some length by the writer of the following notes, a Master, it will be seen, who is a practical poultry keeper :

> There is a good deal to be said, not only from a fox-hunting point of view, but also from the landlord's, the tenant's, and also the shooting point of view. For birds to be scattered all over a farm, over as wide an area as possible, would, although the poultry might get the "early worm" (if there were no foxes), entail the poultry keeper or farmer in a considerable outlay in keeping vermin down, such, for instance, as stoats, rats, weasels, also carrion crows and hawks. The gamekeeper does, or ought to do this, besides shutting gates and putting stray stock right, and generally keeping on good terms with the farmers. In the case of shooting there is a natural resentment at poultry being scattered all over the farm, as it is very detrimental to game, and partridges will certainly leave ground where poultry congregate. In addition to this the poultry are detrimental to the fences, and if kept in large quantities on the same ground are not a profitable investment.
>
> I may say (this authority proceeds) that I speak with some experience, as I have had as many as 700 head of poultry on a 250-acre farm. Also in a non-hunting country I have noticed that poultry have been placed very largely about in the fields ; and in one case a neighbour of mine who lets his shooting for 3s. 6d. an acre has recently been told that the shooting is now not worth more than 1s. an acre owing to the increase of poultry. If land is taken in a fox-hunting district, it is taken into consideration in the letting. What may be gained by excessive poultry-rearing may be lost by putting a stop to shooting or hunting ; and it is a very moot point whether excessive poultry-

breeding would pay in any case, and it is a certainty there would be loss in other ways: keepers, beaters, and farmers would all lose.

One cannot help noticing a rather strange fact with reference to fox-hunting and poultry. As a rule, foxes will not take poultry close to where they breed; they prefer to go further afield, although, of course, there may be exceptions. I may say this is a known fact.

In the country which I have hunted for many years the poultry fund was made to recompense the labourers and poorer classes. In some estates it is provided that no poultry claims are made, and a hunting farmer, without exception, would never dream of making a claim against the Hunt, fully recognising the great benefits, not only to sport, but to himself and his neighbours. No better argument can be produced than that the thing works harmoniously and smoothly in this country, and is managed by a committee of farmers themselves. Poultry about a farm homestead are more natural, and they lay better among the haystacks. A good fox terrier kept about the farm and a few pieces of old iron hung about will prevent most foxes, unless they are very hungry, from robbing the roost. Poultry funds no doubt pay for a good many two-legged foxes.

It must not be forgotten that land with a lot of game on it is let cheap and the game, more often than not, is given away; even if not, it is sold at a price far below cost and is a welcome change from the chicken.

I might add there is an enormous extent of land unhunted where there is no damage done by fox-hunting. Statistics would be interesting, showing if the farmers and poultry rearers are making bigger results than in hunting and shooting districts.

[*To be concluded next month.*]

POULTRY A CENTURY AGO.

IN the year 1802 there was published the fourth edition of a book written some years previously by Arthur Young, the celebrated agriculturist, in which there are some extremely interesting notes on the management of poultry. The book contains over 600 pages, only two of which are devoted to poultry —a striking instance of the position then occupied by this branch of agriculture.

"Poultry are an article of luxury," says the author, "for which the little farmer never obtains an adequate price. He had better allow his wife a certain annual sum for pin-money than suffer her to keep these devourers. The best, whitest, and sweetest chickens are the common barn-door fowls; they may be improved in size. Best breeders and layers, Dorking and Polanders; they make large fowls, but of a yellowish ivory white. The Shackbags or Duke of Leeds breed, the largest we had, are worn out. The Chittigongs, or Malay fowls, are very large and coarse, fit only for soup, but they lay very fine large eggs. Four hens to a cock, or five at the most. Hens set twenty-one days. Leave plenty of eggs in the nest when you desire them to sit. Take away the strongest chicks as hatched, securing them in wool, until the whole are hatched and strong enough to be cooped. Hens not to be cooped near, as they may kill each other's chickens. Young poultry feed by themselves, or under coops, as the large are apt to tread the smaller to death. Feed the chickens with split grouts at first, afterwards with tail wheat. The best food for this kind, barley: to fatten them, barley or wheat meal and milk. Boiled barley or malt, toast and ale, to make the hens lay in winter. The true shape of the hen and cock, short legged and long bodied, but plump." This is all that was written on the management of fowls, and anyone who could have hatched and reared successfully must indeed have been able to read between the lines.

"Ducks set thirty days. One drake to five ducks. They begin to lay in February, and must be well attended, or they will lay their eggs abroad. Ducks set over eleven to fifteen eggs. To be watched and fed when they leave the nest. When hatched, trim the down off the tails of the ducklings, feeding first with barley meal and ground malt. Water in broad dishes, that the ducklings may not go to the pond too soon, whither they must not be allowed to go, at their full liberty, until a month old at least. A duck with young ones, always to be kept away from the others, being allowed plenty of clean water and straw. Ducks are great devourers of any kind of victuals, but will make a poor figure without corn. In the acorn season they will get very fat, and do not eat amiss; fed with the offal of the slaughter-house they acquire the colour and flavour of the wild fowl. The Rhone breed, from France, are bigger but coarser-fleshed, and not so fine flavoured as our own; they cross well with our English breed.

"An exception must be made in favour of geese, which will graze to advantage, and make much good manure; they are, besides, useful in the farmyard for giving alarm at nights. One gander to five geese, setting and management similar to the duck. The goose carries straw in her bill, as a sign she is about to lay, and must then have a nest prepared for her. Give chopped cabbage, lettuce, or carrots, and some corn (oats), particularly when they set; for the young ones chopped livers and meal. Not to be sent out to graze too early, and always fed before turning out, lest they wander beyond their strength, which is the occasion of many being lost every year. Suffolk geese as good as any. A goose fattens well on oats, in six weeks, littered down with clean straw; if from the stubbles in two or three weeks.

"Turkeys, a staple article in Norfolk, where the good wives send their hens to some cock kept in the neighbourhood, to avoid the charge of keeping a stallion. Hen covers eleven or more eggs, according to her size, and will steal a nest abroad unless watched. Take away the chicks as fast as hatched. Feed with curd, barley meal, ants' eggs, &c. Keep the brood up a month, turning out a few hours in a day, in a secure place, taking care the hen does not drag through the wet grass, she being entirely careless of them. Give skimmed milk to drink. The practice of cold bathing young turkeys and giving them a peppercorn is merely notional. Keep very clean and dry, and prevent the young from scouring, which is fatal. Gravel, boiled flesh meat, chopped up, is strengthening, both to young turkeys and chickens."

GENERAL VIEW OF PENS AT STREET. [*Copyright.*

PROGRESSIVE CO-OPERATION AT STREET.

STREET, Somerset, in spite of its name—the derivation of which we do not know—is notable in several ways: because of its nearness to Glastonbury and Sedgemoor, both of which places are historic; by reason of its prosperous slipper and boot manufactures; and on account of its idealistic conditions for industrial workers. Possibly it has gained the greatest amount of fame owing to the example it has given of progression in development of the poultry industry. Hence it is known throughout the length and breadth of the country. As is usually the case, this result is due to earnest and indefatigable workers, who not only had the grit and determination to overcome local inertia and initial difficulties, but have shown that success is only to be achieved in these days by breaking the fetters of custom and prejudice, branching out into new paths. Among the many who have helped are Mr. J. C. Morland, president, and Mr. W. Reynolds, the secretary of the Street and District Collecting Depôt, Limited, and success has been achieved by personal effort, unwearied exertion, and self-sacrifice on the part of many.

Our present purpose is not to deal with the regular operations of the Street Depôt. The records of these —are they not to be found in the series of annual reports, all showing a constant and growing success? But rather we wish to speak of the newer developments, more especially the Six Months' Laying Competition, which commenced on October 1 last, and, with its one hundred pens, consisting of six hundred birds, is the largest competition of the kind yet held in this country. It is, indeed, a wonderful sight. Situated in a seven-acre field with a slope to the south, it is excellently arranged both for appearance and work. The pens are laid out in blocks of twenty that is, ten double rows of runs, with a pathway between. As the houses are placed in each case by the side of the path, as seen in one of the photographs reproduced, they can be reached with the minimum of labour, especially as the egg boxes are outside. The houses are uniform throughout—6 ft. by 5 ft. —built specially to Mr. Reynolds's design by Mr. Randolph Meech, who has in a public-spirited manner most generously provided them on loan free of cost. They are on the scratching-shed principle with open fronts, but have sliding frames with glass windows so that they can be closed, if that is deemed requisite, which to us scarcely seems necessary. The

runs are in grass, and each consists of about 130 square yards. The houses, spite of the miles of wire netting, make a pleasing *tout ensemble* as revealed in our general view.

The details as to breeds represented are given in the returns published each month, and need not now be given, as we shall hope to describe them more fully in our summary of results when the competition is completed. Many of the leading utility breeds are included, but in some cases not to the extent anticipated. The birds were received early in September, so that they might settle down before the competition commenced—a wise policy. As an indication of the advantage of hatching birds even at a time which may be regarded as too early rather than too late, no fewer than 2,101 eggs were obtained during September, a month when prices are advancing rapidly. On the first day of the competition 165 eggs were laid, and at the time when these notes were taken (late November) production was at the rate of 200 eggs per diem. A few sick birds have had to be taken out and one pen was returned altogether, but with these exceptions the hens are in the very pink of health, full of that brightness of head which betokens active functions and organs. Already the competition is becoming quite exciting, and Mr. Reynolds and his helpers are finding sport in watching the competitive scoring of certain pens day by day. As showing the range of production, the pen which stands first up to November 30 (Buff Rocks) has laid 240 eggs in the two months, valued at £1 11s. 7d., and that which is lowest (Partridge Wyandottes) has laid two eggs in the period named, valued at 3¼d. The former were second during October, whilst the White Wyandottes, which then were first, have dropped to the sixth position.

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AN AVENUE OF PENS AT STREET.

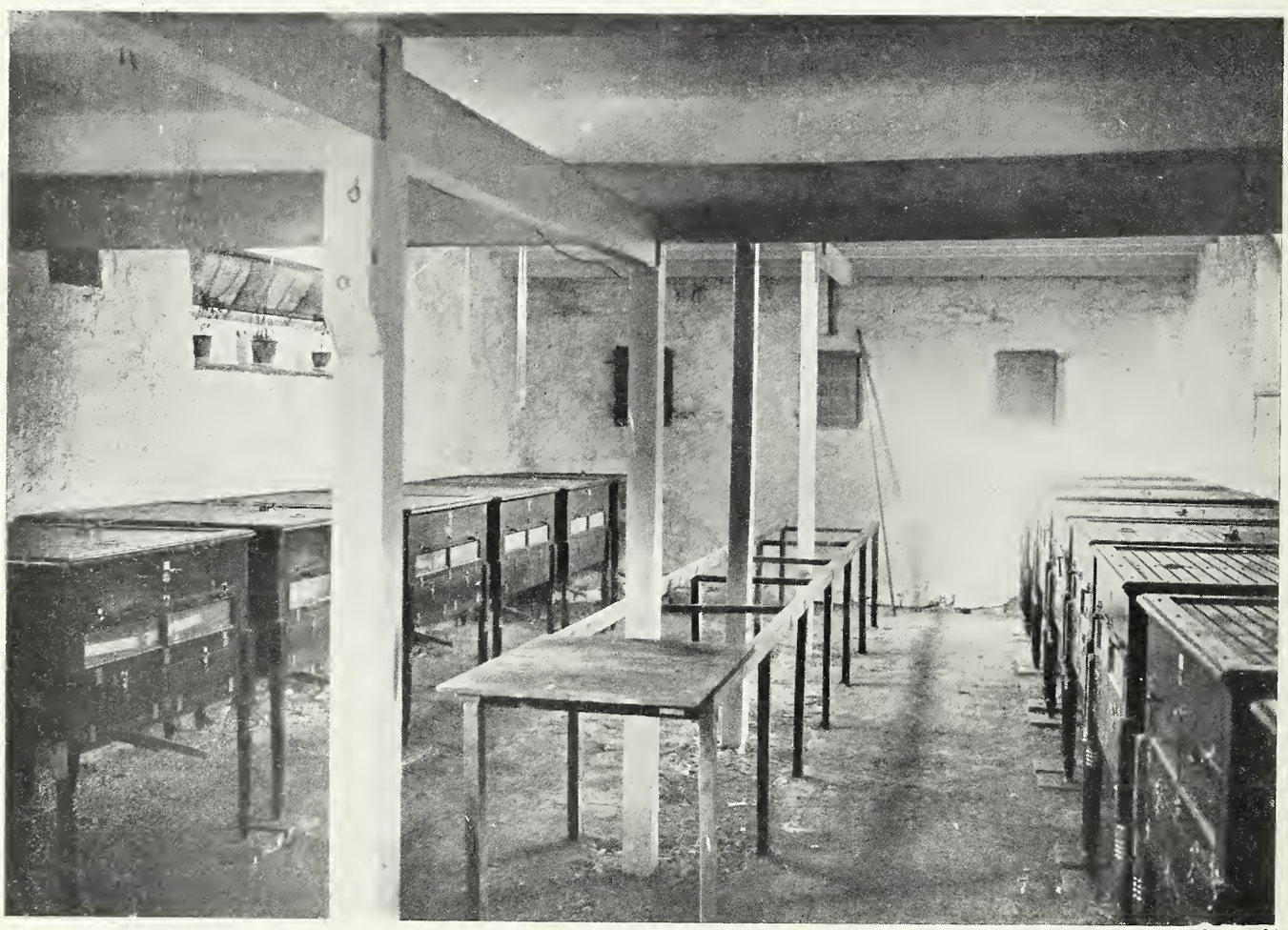
The labour in the organisation of a competition on such a scale is enormous, but, with that thoroughness which is characteristic of all Mr. Reynolds does, the system adopted is excellent in every way and calculated to simplify the oversight and tabulation of the records. The actual work of attending to the birds is in the hands of Mr. Hedges, who is of a poultry-raising family and has lived among poultry all his life. But that is only part of the work. Not only have the eggs to be collected when laid, but they have to be registered. Boxes are provided, holding five cardboard sections, each of which is in four rows of six spaces. At the end of every row is the number of the pen. Thus, as the eggs are gathered they are put into the spaces corresponding to the number of the pen, and five boxes serve the entire competition. Counting is easy by such a method, and it takes but a short time for each day's production to be credited to the respective lots. The eggs are weighed regularly, as the position is finally determined not by the number but by the value of the eggs, so that marketability is an important element. That this is essential has frequently been pressed upon the Utility Poultry Club, under whose auspices this competition is being carried out, but until last year it had not been sufficiently recognised, and mere number — almost regardless of size — determined position. That such an arrangement is required receives proof by two cases in the present test. One pen during October laid sixty-two eggs, weighing 8 lb. 12 oz. (rather more than 2¼ oz. each), valued at 8s. 4¼d.; whilst another laid eighty eggs, weighing 7 lb. 14¼ oz. (a fraction above 1½ oz. each), valued at 7s. 6½d. Thus the sixty-two weighed 13¾ oz. above the eighty and realised 9¾d. more. An examination of the monthly records shows several cases of this kind. The prices are determined by wholesale rates obtained by the depôt in its ordinary egg trade. It will be of the deepest interest to watch the variations throughout the contest. In order to show

how great these are, to the end of November one lot of White Leghorns was eleventh in position and another lot fifty-fourth ; one lot of White Orpingtons was thirteenth and another eighty-eighth ; one lot of White Wyandottes was third and another ninety-third ; and one lot of Buff Orpingtons was second and another eighty-sixth.

Last spring the Street Committee undertook a new development which may have great influence upon the poultry industry in this country, namely, co-operative hatching and fattening. To this end hatching was undertaken upon a large scale. One of our photographs shows the incubator room, the machines in which have a capacity of 7,000 eggs. It will be seen that these are placed round the room, and the bench down the middle is used for the egg-trays, turning, testing, &c. By means of this station the depôt is able to afford an outlet for eggs from members who keep pure bred stock, and to pay better prices than would be possible if the stock was sold for market during the spring months. Many thousands of day-old and six weeks old birds were disposed of, the latter being a new feature of the trade, but one with great possibilities. We do not doubt that the business will increase rapidly, and as it is on co-operative lines, the profits accruing to those who supply eggs, it may be anticipated that there will be greater attention to the quality of fowls kept in the district, as members realise that there is money in it. Additional to the chickens sold as stated above, something like six thousand birds have been reared and fatted.

The premises which have been taken over by the depôt have many advantages. They are roomy and built of stone. The egg-collecting station is to be removed hither, and the manager will in future live in the dwelling-house. There is ample accommodation, and the room which is to be devoted to preservation of eggs is ideal for that purpose — partly underground and cool. As a result of the Street depôt, poultry-keeping has grown enormously in the district, prices of eggs have advanced considerably, and last year nearly half a million eggs were sold, leaving a handsome profit.

In concluding these brief notes of a most interesting visit, we would remind readers that the laying competition is open to visitors, who will find much that is pleasing, suggestive, and instructive in all the sections.



INCUBATOR SHED AT STREET.

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THE POULTRY KEEPER'S EDUCATION.

By EDWARD BROWN, F.L.S.

Nine beginners out of ten think they have other qualifications that will amply compensate for lack of experience.—*Farm Poultry.*

THERE is a common impression abroad that those of us who have shared in the work of promoting the development of the poultry industry are always eager to encourage new recruits, spending our energies in endeavouring to induce the inexperienced to put their money and time into this pursuit. So far as my knowledge goes, a greater mistake could not be made. No one feeling the responsibility of his position, the importance of using for the general good whatever influence he may have gained, and of securing real and permanent progress, can help feeling that to encourage the unlikely, or such as have no chance of success, would be morally wrong and foolish in the extreme. Speaking personally, as many can testify, the majority of those who come seeking advice as to taking up poultry-keeping as a means of livelihood have gone away discouraged and disappointed, their dreams dispelled, their hopes shattered.

The fact is that many of those who, knowing nothing of the subject, desire to take up poultry, are simply looking for an easy method of making money They want a pursuit which will enable them to earn cash without working for it, to be able to attain a success they never can deserve. They have read about poultry-keeping, have heard of one or another making an excellent income by it, and, imagining that anyone can look after hens, they become fired with the transient ambition of doing likewise. A few of them would never succeed in any direction, lacking brains, persistence, and willingness to work. They are the derelicts of human life, incapable of application or devoted effort. One instance will suffice. Some time ago I was consulted by a maiden lady respecting her nephew, whom she had adopted—and spoiled. He had tried a dozen things and failed in every one. Why should he worry ? Her money was to be his. But he must appear to be doing something, and poultry-keeping was his latest fad. When I advised her to send him to sea on a sailing vessel so that he could not return for two years, and ask the captain to give him the hardest work, make him live on the coarsest food, and earn it first, she was mightily indignant. That is an extreme case, but by no means isolated. Sadder are those where men and women, broken down by the conditions of city life, without money or experience, have come to poultry-keeping as a last resource, hoping to find a pursuit simple, easy, and inexpensive.

A large number may fairly be described by the quotation from *Farm Poultry* printed above, which has been made the text for the present article. Anybody can keep hens ! It seems so simple. The notion is part of the heritage from past days, when farmers' wives and daughters were the chief poultry keepers. Provided with the corn they required, they fed regardless of cost and pocketed the money. It was all profit. If a house or a coop was wanted the farm servants did the work. If fresh stock was required the cash needed was cajoled out of the farmer. I believe the profit was in many cases greater than generally believed, but the system was non-economic and gave credence to the notion that it was simple in the extreme. Nor was the idea confined to farmers. Some years ago a County Council, which shall be nameless, asked me to give a week's instruction to its dairy instructress, as it wanted her to teach poultry-keeping. She knew practically nothing of the subject. I refused point blank. That was an indication of the opinion held at the time by large farmers and revealed one of the difficulties we have had to contend against. Poultry-keeping is a highly specialised industry, and I know nothing in which training and experience are of greater importance. Happily since the period named a great change has come over the scene.

The most difficult class of inquirer to deal with is the cocksure individual, who intends to revolutionise the entire industry, or who thinks he has made a discovery which no one else has thought of. Occasionally we stumble on new ideas in this way, and some of the progress made during the past few years has been due to enlarged conceptions or to fresh developments or methods. But, as a rule, many of the theories propounded with such enthusiasm, or brought forward as if they were original, have been tried, tested, and abandoned long ago. It is this class which confidently thinks that lack of actual experience is of small moment. That soon can be remedied, or can be purchased. When inquired into, the other qualifications fail utterly to compensate. Willingness to work there may be, earnestness of purpose, imagination, business ability, all may be present, and it is thought these compensate for the want of practical knowledge. Supplemental to the latter they are desirable and invaluable, nay necessary, but they can never take the place of actual experience, without which the power of judgment and ability to regulate action will be absent. The first point for the

poultry keeper of every grade is the obtaining of experience in order that he may by practical training conduct his operations with a fair chance of success. His difficulties are great enough with such experience, but in its absence failure is certain. Books are of vast help to the man who has a basic and practical knowledge, but are misleading to such as is ignorant of the rudiments of the subject.

The prime necessity, therefore, is for all who desire to take up poultry-keeping, as in fact any other pursuit, to obtain the necessary experience enabling them to handle their operations successfully, giving them reserves to meet special difficulties as they arise. The more highly specialised the work, the greater the knowledge required. A farmer who keeps a few hundred hens for egg production as part of his operations does not need practical knowledge in fattening. His experience in the handling of other stock, and the relation of manure to his crops, affords him power to deal with poultry on the lines adopted. On the other hand, the specialist, whose space is comparatively limited, must understand the minutiæ of breeds and breeding, of hatching and rearing, of housing and feeding, otherwise he will assuredly fail. Moreover, he must know sufficient with regard to crops and pastures and soils, in order that he may avoid that bugbear of all stock breeding on intensive lines, namely, tainted ground. Further, he must be able to make the best of his produce in marketing, otherwise he will sacrifice a considerable share of his possible returns; he must not be above his business. I have known several failures due largely to the poultry keeper being unwilling to recognise that it was his business to swallow his pride and sell his eggs and poultry to the best advantage. All these things involve training, which, to be really effective, must be spread over an extended period of time, otherwise it will be superficial and practically useless. But, as indicated above, such training must be wide in its scope, embracing sufficient knowledge of general agriculture in the broader sense to help in utilising land occupied to the best advantage and turning the manure into current coin of the realm, which can only be where land is properly cropped or cultivated.

It must not be thought that the statement of these facts has any other object than to show the importance of realising how necessary is efficient training. Nothing can make up for that, not even money. It is the essential factor. How such experience is to be obtained does not concern us. That may be left to the individual. But we want to remove the impression, all too common, that poultry-keeping is a subject that can be picked up anyhow or anywhere, or that anyone can carry the work to a practical issue without the preliminary course of apprenticeship or training regarded as essential for the selling of drapery or the making of beer.

In this connection it is well to realise that those who wish to embark upon poultry-keeping vary very considerably. No suggestions can be made, which are applicable to all. They may be divided into four classes, namely:

1. Farmers and others with a knowledge of general agriculture, who desire to extend their operations and to make a greater feature of their poultry, but on progressive lines;

2. Such as wish to specialise in poultry-keeping, whether as stock breeders, exhibitors, duck farmers, fatteners, instructors, or as managers of poultry plants;

3. Small holders, whose object is to make poultry hold an important place in their work, but who do not depend entirely upon this branch; and

4. Amateurs, who are not seeking to make a living out of poultry-keeping, but at the same time desire to carry out the work in the best manner, with a view to making it profitable in a modest way.

It will at once be seen that no system can be devised to meet all these cases. What is requisite for one is needless for another. But we may re-emphasise that, to succeed, all must understand the basic principles of agriculture, which are the same whether applied to gardens or fields. Perhaps the fourth class need this least of all, though even in their case it is desirable. Presuming that those included in the first class understand ordinary farming, the time required for learning general poultry work need not exceed six months, if application is earnest and constant, though probably twice that time might be spent with advantage, the latter half of which could be given to special branches.

So far as the second class are concerned, much will depend upon the knowledge they already possess. In too many cases these are absolute novices, under which circumstances it is unreasonable to imagine that they can learn the business in less than a couple of years, and in some cases full success can only be achieved by longer experience, as only in that way can part of the knowledge be acquired. The first part of the time should be devoted to learning the rudiments of farming, after which the poultry side may be taken up.

Probably the greatest difficulty will be with small holders, who cannot afford to spend much money in acquiring knowledge, and yet to no class is it of greater importance. It may be hoped that the recommendations of the Departmental Committee on Agricultural Education will be carried out with respect to Winter Schools or Courses, and small holders by means of scholarships be enabled to avail themselves of such opportunities. If that is so

poultry-keeping should be, in many districts, a leading part of the teaching. By spreading the training over two or three seasons much can be done to meet the circumstances of those who should have much to do with building up a new rural community.

Educate! Educate! Educate! is, therefore, the immediate need. Here a word may be said as to so-called theoretical teaching. There are those who condemn it absolutely. No one has ever suggested that it will qualify the novice or enable him to conduct his operations successfully. Practical training, on the other hand, is restricted in its scope to the actual work performed and does not afford any reserves of knowledge or that enlargement of outlook essential to success. The two should go hand in hand. By theoretical instruction we mean, in the first place, the endeavour to give the reasons why certain methods are adopted in preference to others, and, in short, the why and the wherefore of the science of any subject; and, in the second place, it gathers the experience of hosts of workers and experimenters all over the world, which would otherwise be largely lost to the poultry keeper. Intensification of methods involves many difficulties unknown under ordinary conditions, and it is in this direction that science has been and will be of vast importance. The object should be to equip the would-be poultry keeper with the stores of knowledge available, so that he may avoid the loss of time and money going over ground already traversed by others and be enable to begin to a large extent where they have left off. One example will suffice to illustrate this point. To waste time in attempting to make incubators, ignoring what has been done in the last twenty years, would be folly. Present-day machines are the embodiment of two or three decades of experience and knowledge.

"THE MURGHI."

By George Cecil

No globe-trotter leaves India's (so-called) coral strand without making the "murghi's" acquaintance; and countless generations of exiles have consumed "murghis" by the hundred, perhaps by the thousand. This indispensable bird figures at the sumptuous board of the "Lieutenant-Governor"—an Anglo-Indian magnate, who rules over the destinies of several million natives—and at the humble Eurasian "Deputy Collector's" evening meal. It occupies an important place in the *menu* at a "burrakhana"—as the dinner party is termed; and the warrior does not dream of leaving his bungalow for morning parade till (to adopt the vulgar vernacular) he has put away a substantial helping of grilled "murghi." Briefly, the "murghi" is a commonplace Indian fowl in whose veins somewhat mixed blood flows. Its remote ancestors may have been prize-bred Minorcas, or Dorkings, of ancient lineage; but frequent intermarrying on the part of its forebears has made him a half-caste amongst poultry. All "murghis," however, are not of mixed race; one meets with a percentage which are of pure blood. The jealous owners of these exotic birds do not permit their treasures to marry beneath them. Imported fowls, which have been specially procured from home are kept apart from the common herd.

The "Mem-Sahib" who lives in a large "station" usually concerns herself with the kitchen rather than with the poultry yard. When the itinerant native poulterer displays his feathered wares she merely consults with the "khansamah"—cook—and buys (at from four to seven *annas** a piece) as many fowls as are required for the table. If, however, she or the "Sahib" prefer fresh eggs to the variety which, after remaining unsold in a "bazaar" shop for an undesirable period, are palmed off upon her as being newly laid, she instructs the fellow to bring her a few good layers. But her interest seldom carries her further, though, if the "Mem" hankers after spring chicken, she considers it desirable to superintend the feeding of her "murghis." For the black to whom she entrusts the fattening of the fowls, like ninety-nine and a half per cent. of his countrymen, neglects no means, however illegitimate, of enriching himself at his employer's expense. Indeed, he is almost brought up to rob whenever a safe opportunity presents itself; and, if he succeeds in escaping the vigilance of the lynx-eyed "Missus," he speedily becomes a hero in the estimation of his rascally fellow-servants. Squatting on his heels in a sequestered corner of the "compound," he holds forth to an admiring audience:

"Yes, O Abdul, the *Mem-Sahib* thinks she is clever—even as Ram Dam, the Police Inspector, is clever.

* An *anna* equals a penny.

But she is a fool of fools: a child might throw dust in her eyes. Every day (praise be to Allah!) I am three *annas* the richer for her stupidity."

"Tell us, O brother, how you achieve this great and worthy deed?"

"Listen, then, my brethren. This daughter of an owl orders the grain man in the *bazaar* to bring every morning a certain quantity of food, which the clever fellow (who is my brother-in-law) tells her is mixed according to a specially good receipt. As half of it is dirt scraped up in the road, the cost to my brother-in-law is so little that he can easily afford the *anna* a day commission which he pays me to keep his secret."

"*Shabash, Shabash! O murghi* man, and how do you make the other two *annas?*"

"Well, the silly *Mem-Sahib* does not weigh the mixture, so I always secrete a certain amount of it before I feed the fowls in her presence. By selling this to another dealer I make the other two *annas* a day."

"But surely so clever a *murghi wallah* can also make something out of the eggs?"

"Yes, O my brethren. The fowls are worth at least a *rupee* a week to me on this account!"

"Clever *murghi wallah!* We admire you immensely. And will not you tell us *how* you manage to thus augment your miserable wages?"

"With pleasure, dear friends. Every hour I visit the fowl-house, hoping to find an egg. Many times I am unsuccessful: indeed, I almost weep when I pay half a dozen visits each of which is fruitless. But (thanks to Allah!) the hens—who truly are daughters of *Shaitan*—eventually listen to my prayers. Out of every three eggs which are laid, I take one to the dealer in the *bazaar*, who pays me two *pie*. By the end of the week he has paid me at least one *rupee* six *annas*."

"One *rupee* six *annas*, brother! We thought you made only a *rupee*."

"True, O wise one, I do. The extra six *annas* is claimed by the *Mem-Sahib's* cook. Thus are the poor robbed. . . ."

It must, however, be borne in mind that the Anglo-Indian lady is not always as confiding as the minion believes her to be. Sometimes she is more than a match for the keeper of the "murghi khana," as the fowl-house is termed in the vernacular. And woe betide the rascal who tries to indulge in peculation at her expense; his shrift will be short and his punishment heavy.

In the very small "mofussil stations," which are not included in the fowl-seller's itinerary, and where there are no "bazaar" poulterers, the mistress of the bungalow is obliged to keep fowls. Indigo and tea planters also take a lively interest in the poultry-yard. In fact, the ubiquitous "murghi" figures, in some shape or form, at almost every repast. At "chota hazri" (early breakfast) poached eggs are served; boiled chicken may be the principal dish at the chief meal of the day; chicken broth frequently takes the place of soup, and the "Civil Surgeon" invariably places the invalid upon a chicken jelly diet. It may also be noted that the railway engineer who is "on construction" in the wilds and the "official" who is in "camp" in some remote jungle, far from a village where supplies can be purchased, are dependent for their dinner on the ubiquitous "murghi." A large crate of these handy birds is included in the "Collector-Sahib's" camp stores, while hens of all sorts and sizes may be seen in the neighbourhood of the "construction bungalow," diligently searching for scraggy Indian worms and other delicacies upon which the "murghi" supports life. At intervals a fresh supply is procured from the nearest bazaar.

It may be pointed out that, were India suddenly to be deprived of its supply of "murghis," the "Sahib log" would have to go hungry. Yet the ungrateful Anglo-Indian — from the "Member of Council" (biggest of bigwigs) down to the last joined native infantry subaltern—cuts ill-natured jokes at the expense of the inoffensive bird; the "Commissioner" complains that its flesh is as tough as leather; Mrs. Commissioner asserts, in acid tones, that it is not fit to put before a Christian; the "Joint Magistrate" (a sort of sucking "High Court Judge") sends away his portion untasted; and the "Opium-wallah-Sahib" declares that even his dainty dog will not eat it. Briefly, these pampered people, who, when "on leave" in their native land, contentedly munch unappetising cold mutton, unite in abusing the chief stand-by of their larder. It must, however, be admitted that it rests with the native cook to transform the "murghi" into a more or less succulent dainty. The "khansamah" has a dozen different ways of disguising, by means of jealously guarded recipes, the creature's somewhat tasteless flesh. With a little cayenne pepper and finely chopped chutney and a spoonful of mixed spices he concocts as appetising a *plat* as the jaded exile can desire. He has no equal in converting the most athletic fowl into an acceptable spatch-cock, while his "murghi" grill (upon which he lavishes much mustard) is decidedly an acquisition to a *menu* which, owing to force of circumstances, must, necessarily, be limited. Sometimes he varies the grill by taking the white meat only of two or three fowls, serving it on toast, adding, by way of a finishing touch, a sprinkling of Nepaul pepper. Or he may provide "master" with a dish of chicken curry—curry such as no English cook can prepare, while for state occasions he devotes his energies to making a "pillau." And

the man who can appreciate this most excellent dish is a *gourmet* of the first water!

Though the "khansamah" is scarcely famed for the rapidity with which he executes the "Sahib's" orders, the "dak bungalow" (native hotel) cook sometimes proves himself an exception to the rule. The travel-stained, tired and hungry white man, upon arriving at his destination, summons the dusky menial and asks what there is for dinner. "Master having *murghi;* not getting anything else." "All right—and get my bath ready." The traveller, having selected the fattest fowl from amongst those who eye him suspiciously from their coign of vantage on the railings of the verandah, retires. Within an inconceivably short time the turbanned magician of the "bowarchikhanah," making his appearance at the bathroom, remarks: "Bath ready, dinner ready. Which Sahib having first?"

Sometimes the Anglo-Indian Lucullus keeps up his reputation by supplying the poultry for his table with a special fattening diet, inspecting them daily and taking notes of their increase in weight. He does not, however, always reap the fruit of his labours, for the hen-roost may be feloniously entered in the night. Many a "Sahib" when dining with a neighbour has unconsciously eaten his own fowls.

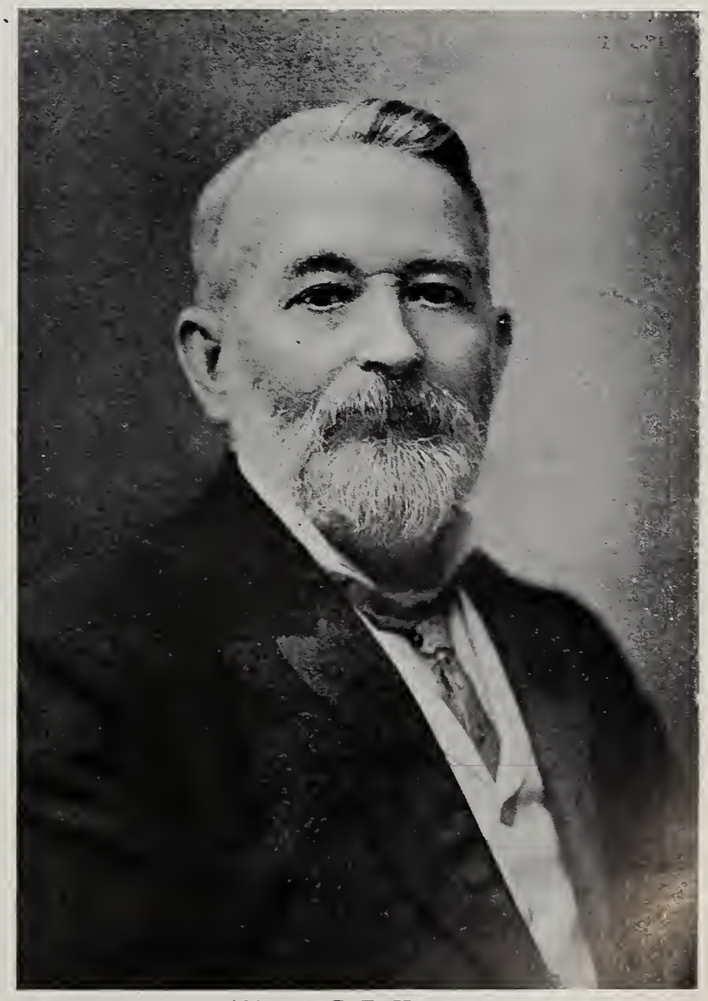
WHO'S WHO IN THE POULTRY WORLD.

ALDERMAN CHARLES E. HEARSON.

To have practically solved the problem of artificial incubation, which had puzzled investigators for centuries, by the invention of a machine first accomplishing the object in view, namely, simplicity of operation, reliability of regulation, and the hatching of a satisfactory percentage of strong chickens, is a contribution of the greatest magnitude to the poultry industry. Such an achievement must, in all fairness, be accorded to Mr. Charles E. Hearson. His well-known incubator, the first really practical machine, is used all over the world, and it is the model on which all tank machines are built in every country. Prior to 1882 hatching apparatus were expensive toys, needing a special apprenticeship to operate, were cumbersome and troublesome. Since that time they have become a necessary part of the poultry keeper's equipment.

Personally Mr. Hearson is very little known to those whom he has served so well. His labours were in the experimental room and the workshop. Many who, attracted by the chickens in the Regent-street premises, went in for a talk, did not know that the Mr. Hearson they saw was not the inventor but his brother. Until the sale of the business to Spratt's Patent, Limited, the last-named had charge of the trading section, and it was he who came into contact with the great multitude of visitors who went there to purchase or seek advice.

Born at Barnstaple, N. Devon, in the year 1845, the early working days of Mr. Hearson were spent in various pursuits, but largely in connection with a chemist's business, although his tastes were distinctly towards engineering. Still, the chemical experience has been of the greatest service. Later he entered into the sphere which interested him. For recreation he made several automatic models. It is not generally known that the singing birds and moving ships which, worked by dropping a penny in the slot, were a great attraction at the old Polytechnic in Regent Street, London, were Hearson inventions, and the secret of these is as yet unrevealed. It would be impossible to give a list of all the inventions by Mr. Hearson, numbering thirty-one, but they include gas-making plants and cooking-ranges as well as the well-known incubators, brooders, and cramming machines. In the evolution of the famous Champion incubator no less than fourteen distinct apparatus on as many different principles were built and tried, during which nearly all the methods of past days were tested and a good many systems which during the last few years have



Alderman C. E. Hearson.

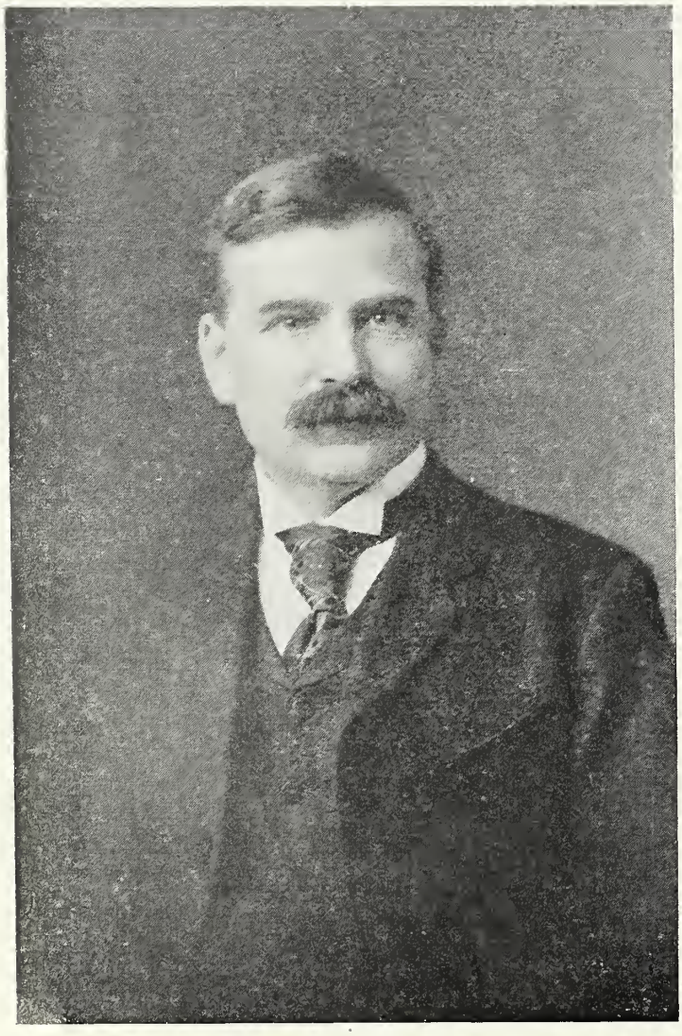
been heralded as new ideas were discarded. In the course of his experiments hundreds of thousands of chickens have been hatched, for the practical end was always kept in view.

We have often hoped that Mr. Hearson would give

to the world some record of his work and the knowledge he has gained. Whether that will be so remains to be seen, but it ought to be done. Since his retirement from active control of the business he has taken up public work, which appears to absorb all his time. Elected a member of the old Camberwell Vestry in 1897, he became a member of the new Borough Council, and is now an Alderman, in addition to which he is the Council's representative upon the Metropolitan Water Board, on which latter body he is chairman of the Works and Stores Committee, having charge of all the water supplies from the Board's works to the consumers' taps. Last October Mr. Hearson had the honour of cutting the first sod and laying the foundation stone of a larger installation in the neighbourhood of Molesey.

PROFESSOR JAMES E. RICE.

AMONG the younger men engaged in the promotion of the poultry industry in the United States, Professor James E. Rice, of Cornell University, Ithaca, N.Y., occupies a leading position, both as to instruction and experimental work. Fortunate, indeed, in possessing the means and the will to take up poultry teaching on advanced lines, he has risen to his opportunities, and the Cornell reports are among the best which appear on this subject. Moreover, Mr. Rice was, we believe, the first to attain to full rank as Professor of Poultry-keeping. His knowledge of the subject is deep and wide, his earnestness of purpose constant. He is an attractive and interesting speaker and has a personality which marks him out among his fellows.



Professor J. E Rice.

Mr. Geo. H. Proctor, J.P.

Mr. Rice is a graduate of Cornell, which he entered as an agricultural student in 1886, graduating in 1890. He is an example of the working student class, that is, working to live as well as to study, which is so striking a feature of American University life, for during his college course he was entirely self-supporting and managed one of the largest and most popular student boarding clubs of the time. From 1890 to 1893 he acted as assistant to the Professor of Agriculture at Cornell, during which time he gave a course of lectures on poultry to the students—the first course ever given at an American agricultural college. For the next ten years he was engaged in poultry and

fruit farming, but often gave lectures at the winter institutes. In 1903 he returned to the University as Assistant Professor of Poultry Husbandry, and in 1907 was raised to the full Professorship. Under his care the courses of instruction have grown rapidly in popularity and the poultry plant has been greatly extended. He is the first secretary of the newly formed Conference of Instructors and Investigators in Poultry Husbandry, which held its inaugural meetings last July.

MR. GEO. H. PROCTOR, J.P.

TO have been a breeder of one variety of poultry for something like forty years, and to have held for the greater part of that time the premier position, is almost unique. Such is the case with the subject of this note. Proctor and Buff Cochins are designations which appear to be inseparable—the one suggests the other. Black Cochins, Silver-grey Dorkings, and other races of poultry, as well as stock of various kinds, have carried the Flass House standard to victory on many occasions; but the Buff Cochins were the first love, when the father of Mr. Proctor bought his boy the original specimens, and evidently they will be the last love. Throughout the years which have intervened there is scarcely a leading show that has not found the Durham flock at the head of affairs. In these utility days the breed named is frankly exhibition stock. No one thinks of keeping them for their economic value. But that they are, in conformation and colour, among the handsomest of fowls everyone will admit. How many prizes Mr. Proctor has won with them, how much his total sales have amounted to, probably he cannot tell. The list in both cases would be lengthy in the extreme.

Mr. Proctor has been all his life a hard and earnest worker, and his life, full of varied interests, is closely identified with his native place, the city of Durham. J.P. for that city, three years ago he held the office of mayor. Poultry and agricultural shows have received his sympathy and support, and we can scarcely tell what he has not done in this way. As judge, too, he has frequently officiated at leading shows. He is a broad-minded, warm-hearted fancier of the best type. Success has been his reward. Again and yet again have his birds carried everything before them. At Birmingham Show he has exhibited for nearly forty years, and with frequent success. One year with a team, we think, of eleven birds, he carried off every possible prize save one, and that of minor importance, including the cup for the best bird in the show and the cup for the best Cochin. He was offered £100 each for six or seven of these birds—and refused it, saying, "If they are worth one hundred pounds each to anyone else they are worth it to me." This revealed the strong man and the true fancier, to whom money is of lesser importance than the honour of breeding and winning with the best.

[Copyright

A CORNER OF THE FARM OWNED BY HERR J. BYMAN, whose portrait appeared in the November issue.

Handling Birds at Shows.

Now that the show season is practically at an end, it will not be amiss to refer to a few items in connection with the exhibition of poultry, which are apt to be overlooked in the times of stress. One that requires to be brought to the front is the question of handling birds which are sent for competition. It will be recalled that in connection with the late Dairy Show an exhibitor wrote to a contemporary that, upon examining his exhibits on their arrival from the event, he found that two of them were minus their sickle feathers. "It is evident," he wrote, "that some evilly-disposed person has deliberately pulled out the feathers, no doubt with the idea of hindering them from competition for trophies, &c., at the Crystal Palace and club shows. It is high time that the work of such persons was stopped and the scoundrelly tricks exposed." A substantial reward was offered in connection with the affair, but the "culprit" is evidently still at large. This case is not the first which has come before my notice, and it will probably not be the last. It would be difficult indeed in instances of this nature to prove that the damage was done by "some evilly-disposed person" or that it was deliberately done. There are, unfortunately, a few black sheep in the Poultry Fancy, but such practices as those mentioned above do not belong to the present age. For my own part I would rather look for the "culprit" among those who pen and unpen the birds. I do not wish it to be inferred that the regular hands employed by the show contractors are not capable of carrying out their duties in a thoroughly competent manner, since no one knows better than I do that these men are well up to their work. But it has happened that a very timid bird has had to be dealt with, and it is not always possible to take such a specimen out of its basket or its pen without in some way damaging its feathers. But the blame in this case would surely rest with the exhibitor for sending an untrained bird for competition.

A Case in Point.

Some years ago I was judging a class of Black Leghorn cockerels, which, as most readers know, require to be handled to ascertain the state of their under-colour and flights. My steward, who was a thorough fancier and well accustomed to handling fowls at shows, on attempting to remove one of the cockerels which was very wild, quite accidentally removed some of the bird's tail feathers. I made a note of it at the time, and subsequently wrote to the exhibitor on the subject. And his reply was in the form of an apology for sending such an untrained bird to the show, and assured me that he was quite satisfied with the explanation I sent to him. The bird had been forwarded in place of another which had died three days prior to the event, and it had only arrived at his place from the rearing-out farm a day before it was despatched to the show. At another show last month, where I was judging, I came across an Orpington cockerel which had evidently been damaged in the penning. His flight feathers were badly twisted, and on questioning one of the stewards I ascertained that the bird had been a trouble to get out of his basket. He was certainly of a highly-nervous disposition—so much so, in fact, that I had to leave him cardless on that account. It is the height of folly to send for exhibition fowls which have not been properly trained and those which are not thoroughly accustomed to being handled. Competition nowadays is so keen that judges must completely examine the specimens submitted to them ere giving their "verdict," since the appearance of a fowl's under-colour, flights and tail in many varieties, which cannot be ascertained by a mere glance, may mean the difference between a first prize and even a commended card.

Wiring Pens after Judging.

It is thought by some exhibitors that it is quite time the pens were wired down after judging at all shows; and such a plan as this has been carried out during the past season, while at one or two of the most important events certain fanciers have gone the length of padlocking their pens after judging. There is much for and against such a practice. It must be admitted, on the one hand, that, rules notwithstanding (and in most schedules it is distinctly stated that no specimens must be removed from their pens except with the secretary's consent), too many visitors of late have been in the habit of examining specimens

at shows without any apparent reasons, and in doing so they are not very particular as to how they handle them. I do not suppose for one moment that they deliberately intend to injure the fowls in any way; it is an act of thoughtlessness. But if they were to consider that such frequent handling is very apt to knock a bird out of show form they would probably refrain from doing so. That reporters should be permitted to examine the birds goes without saying, since their duty is to give a correct description of the specimens; but that others should do so, when they have no intention of examining the bird with the idea of purchasing it, is most unfair. On the other hand, the universal wiring of pens after the specimens have been judged may lead to carelessness on the part of the adjudicators. If such a plan were adopted at all shows, what would prevent a judge, under stress of large entries, merely passing his verdict without thorough examination? All judges are human, and many secretaries are too anxious that a judge shall get through his task in an impossible space of time, so that the whole of the cards may be on the pens ere the public is admitted. Personally, and speaking as a judge, I am opposed to the wiring of pens. Rather would I suggest that the show committees employ sufficient stewards to see that the show rules are rigidly carried out.

Toe-punching Chickens.

I understand that at a largely-attended general meeting of the Partridge Wyandotte Club, held last month at York Show, it was decided that the marking of chickens by punching a plain round hole in the web of the foot is permissible, but that no other distinguishing mark (except the conference ring) be allowed. My informant also tells me that the question is to be seriously considered by the White Wyandotte, the Silver-Pencilled Wyandotte, and other specialist poultry clubs, and that the matter is to come before the Poultry Club Council. I might add that the question as to whether it is allowable to punch a small hole in the foot of a bird for identification purposes has been discussed by the Poultry Club; and at a meeting of that body held on February 8, 1907, when the minute of the resolution passed on October 4, 1905—"that punch marks be not allowed"—was read, a proposition to rescind it was lost. That toe-punching is a convenient manner in which to mark one's birds goes without saying; but there has always been a fear that such marking would be an easy means of identification for a judge. No objection can be taken to "a plain round hole," though how that would answer the purpose claimed for it remains to be seen. Toe-punching is not confined to a plain round hole. The marks are of many different patterns, as they needs must be if breeders are to use them as a means of identifying their birds from those belonging to someone else, or even to distinguish one strain from another. And, candidly, I fail to see the purpose of the plain round hole. However, perhaps some reader who is better versed in these matters than I appear to be will give me an explanation.

WITHHOLDING PRIZES AT SHOWS.

By W. M. Elkington.

THE custom of withholding prizes or paying short prize-money is becoming more general; and sooner or later the Poultry Fancy will be compelled to realise the gravity of the situation and look about for a fair solution. We must remember, however, that there are two sides to this question; when we hear an unfortunate exhibitor lamenting the reduction of his prize-money, we must not allow ourselves to be carried away so far as to forget that there is something to be said for the shows.

How many shows at the present day, I wonder, manage to pay their way? Many fail to draw entries through no fault of their own, and when a committee of fanciers, many of them working men, find themselves confronted with the alternative of making-up a loss of £20 or £30 or reducing the amount of prize-money, it is not to be wondered that they choose the latter. This, of course, opens up a wider question, and we may ask whether it would not be better if all shows were compelled to have a guarantee fund, sufficient to cover all prize-money. But considering there is no governing body at the present time capable of enforcing such a hard rule, I think we may leave that out of the question and deal with matters as they stand.

If we are to recognise the fact that the innumerable small shows held in all parts of the country are doing good work in popularising the breeding of exhibition poultry, we must take their circumstances into consideration and grant them a loophole for escape when financial ruin threatens. There are four methods by which a show can save itself, if necessary: (1) by cancelling, (2) by amalgamating classes, (3) by withholding prizes, (4) by reducing the prize money; and of these four methods the first and last are recognised by the Poultry Club as legitimate, on the understanding that, in the case of reducing prize-money, due notice is given in the schedule. Amalgamation of classes is strongly to be condemned, and there are many reasons why the wholesale withholding of prizes should be compelled to give place to a fair and equitable sliding scale, by which the shows may be protected from serious loss, and the exhibitors may at any rate be sure of the full awards, whether they get full prize-money or not.

When a first, second, or third prize is withheld it means that the exhibitor is deprived of the award as well as the money, and it often happens that an excellent specimen which has been winning firsts all over the country is awarded a second prize because there are not sufficient entries in the class to justify the giving of a first. Fanciers generally are agreed that it would be far preferable to let the awards stand as advertised in the schedule, and reduce the amount of the prize-money according to the number of entries if necessity compels, so that, I think, there is general agreement that the actual withholding of prizes should become a thing of the past.

There is one grave objection to the adoption by the Poultry Club of a rule permitting the reduction of prize-money, and though I do not think it sufficient

to condemn the rule, I mention it here because I am in hopes that the subject will be thoroughly threshed out in these columns, and therefore it is necessary that we should consider every possibility. This objection is that the rule permitting the reduction of prize-money is calculated to tempt show committees to adopt the principle when there is no necessity to do so. I have one case in mind. A show which has invariably done well with entries, and has been able to pay its way, stated in its schedule this season that prize-money would be paid upon the sliding scale system. Some of the committee thought they might as well take advantage of the Poultry Club's regulation, and so the principle was adopted, with the result that many old supporters of the show withheld their entries, and the average per class was three or four below that of a year ago. In spite of its new rule I believe the committee of this show has lost money this season, and the general opinion is that "it serves them right," since there was never any necessity to adopt such a policy. This makes it perfectly clear that, though the practice of reducing prize-money may be necessary in many cases, it is unpopular; and there are a great many exhibitors who will never enter at a show where the rule is in force.

As the Poultry Club stipulates that shows, held under club license, and wishing to take advantage of the rule, must state the fact clearly in the schedule, show committees are very properly compelled to run the risk either of facing a loss or of estranging a certain number of supporters. They cannot wait to see how entries come up before they decide to adopt the half prize-money rules, as, no doubt, many would like. In justice to exhibitors the Poultry Club should see that the rule is carried out to the letter, and then exhibitors can please themselves whether they support shows which adopt the sliding scale. That seems to me to be the most equitable arrangement for all parties, for it would be intolerable if shows were allowed to reduce their prize-money as they chose without having given due notice, and it would be equally unfortunate if a struggling show which encountered bad luck could not find a loophole of escape.

Until better times arrive and poultry shows are able to attract the public, we must, unless we make up our minds to weed out the smaller shows (and incidentally the smaller fanciers), allow them the benefit of some such rule as the Poultry Club has adopted; and so long as those shows which intend to take advantage of it are compelled to state their policy when they issue their schedules there will be a sure safeguard for the exhibitor. Those show committees which might be tempted to adopt it without good reason will be deterred by the knowledge that in doing so they run the risk of driving away a large proportion of their old supporters.

THE PAST YEAR.

By W. W. Broomhead.

To the casual observer one year in the Poultry Fancy is just the same as the other. In spring we attend to the hatching and rearing of chickens and the sale of eggs; in summer we are anxious that our young birds shall grow and feather in a satisfactory manner, and we patronise one or two of the early shows to see how others have fared; in autumn the show fever begins; in winter it ends, we dispose of the surplus stock, and mate those fowls which are to produce our next year's winners, and so keep our names to the front. Such is, perhaps, the common round, and many there are who follow it. Yet to those who are true fanciers, whose Fancy is their hobby, there are instances in each year which mark it as quite distinct from the other.

Fanciers, like all others who keep poultry, are greatly dependent on the weather; and from that point of view the past year has been a peculiar one. The seasons have seemed out of course. It has ended as it began, with days of unusual mildness. Such a year has been, as we might well expect, by no means a generally prosperous one in the poultry yard. In early spring things seemed to promise well; the mildness of the past winter caused hens to lay many and unusually fertile eggs, but soon the ill-effects of what is commonly called unseasonable weather made their appearance. Poultry, like human beings, are the better for a bracing now and again; they had had none through winter frosts, and their powers soon seemed exhausted. As the spring advanced we heard complaints on all sides of infertile eggs, dead in shell, and weakly chickens.

In spite of all these drawbacks, however, fanciers somehow succeeded in producing many noble birds, and the great autumn shows were quite up to those of former years. This must be attributable to the increased care taken of highly-bred poultry and increased knowledge of their proper treatment under disadvantages. Considering the breeds, Orpingtons still head the list; there are yet two distinct types, as was evidenced at the late club shows, many exhibitors favouring the feathery Cochin stamp in preference to the tighter-feathered "standard" fowl. Wyandottes are still popular, although competition in the Gold and Silver laced varieties has not been over strong. Partridges and Whites have gone ahead well; and there is every likelihood that the Columbian will be numerously supported in the near future, since the Buckland Novice Competition is a great scheme to get fanciers interested in the variety. Blacks have had a good boom, but they are still of uncertain type.

Plymouth Rocks continue to keep to the front in more ways than one. That they are popular there cannot be any doubt; but too many of the barred variety have been shown in an unnatural state, although this is, after all, quite a common occurrence. Dorkings, Brahmas, and Cochins are as big as ever; and at the classical events of the year they turn up in good numbers, although it is very seldom one sees them out of the "any other variety" classes at the

minor shows. French breeds are gradually dying out, although the Faverolles still attract a few fanciers. Houdans are nothing like so popular as they were a few years since, and La Fléche and Crêve, as far as English shows are concerned, are a dead letter. Game are extensively kept in the North and Midlands. Indian Game have certainly advanced, and it is pleasing to observe that the breed has now more patrons than formerly and that the prizes are more widely distributed.

Minorcas are as popular as ever, which is not surprising, since, although practically in one variety only (it is seldom any Whites are seen), there are five strong clubs in Great Britain to look after its interests. Hamburghs have fallen in numbers, and in some varieties in quality, till they have become a small class in the hands of a few exhibitors; some effort should be made by the club to save this charming breed from extinction. Langshans continue to enjoy the favour of numerous exhibitors; the Blacks get better year by year, but the ranks of the variety fanciers are not augmented. The Whites do not advance, and the Blues are gradually getting out of favour. Croad Langshans, from a show standpoint, have caught on well and, although bred more closely to standard, they do not lose their utility points. There is a big future before the breed.

Leghorns still have their followers in strong numbers; the "howl" about the change of type in the White has given the variety the advertisement it wanted to set it on its feet again—until then people had apparently forgotten that such a fowl existed! The other well-known branches are about the same as usual, while the latest, the Blues and the Rose-combed Blacks, appear to be entering into a boom. Andalusians are as numerous as ever and, if anything, more popular; but it is a pity the Andalusian Club does not "come out of its shell" and do something for the breed. Sussex are making friends in all parts of the country now that the exhibition of the breed is not confined to its county shows, and, as type has been made a strong point, the breed has gone well. Anconas have not been very numerous at the shows of the past year, but quality has been well maintained, and the rose-combed variety appears to be slowly though surely advancing. We have been disappointed with the Campine. It has advanced in markings and colours, but beyond those in Wales there are not many fanciers who keep the breed. Sumatra Game, like the Hamburghs, are in the hands of a very few exhibitors. Bantams may boast of progress, and among the varieties one or two new breeds have been introduced. Ducks of nearly every breed, geese, and turkeys maintain their quality.

Turning to the shows, we find that some old ones have become defunct, although several new ventures have sprung into existence. The total for the British Isles for 1908 will not be so large as that of the previous year, and, so far as it has been able to judge, the number is about 760; in 1907 it was 773, and in 1906 the total stood at 774. However, it has again passed the 750 mark. The North and Midland parts of England still maintain their vitality, while exhibitions in Wales, Scotland, and Ireland have been up to the usual. Some have paid their way in full, but most of them, or rather a big percentage, would have been failures if they had had to rely on the ordinary items. There are not wanting signs that the exhibition of poultry is at present on a not altogether satisfactory basis; and if the Poultry Club could devise a plan for the regulation of poultry shows, similar to that pursued by the Lancashire Federation, it would accomplish one reform which would more than justify its existence.

The specialist poultry clubs continue to arouse and maintain interest in the different breeds; and there is no doubt that the great advance which has recently been made in the culture of Fancy poultry has in a large measure been due to their influence. The craze nowadays is for single variety clubs, clubs which shall deal with one variety only, and several such were begun in 1908. In time, and at no far distant date perhaps, we will probably see the "mother" clubs swept into oblivion, although when this happens it will be hard on those varieties which have not been popular enough to enable their admirers to form clubs for them. The past year has witnessed the introduction of three or four new breeds, which have come into being with strong clubs at their backs.

Sales have not been abnormally large during 1908, but despite the supposed shortness of money fowls have changed hands at big prices. We know of one Black Orpington cockerel which so late in the season as after the Palace Show changed ownership for £50. But perhaps the most remarkable sale has been that of a Light Sussex cockerel for £25. Most fanciers were wont to look on the breed as fit only for utility purposes and dear at a sovereign; but if there is going to be money in it, the breed will assuredly boom.

With the commencement of another year it is the general rule to turn over a new leaf and start afresh. January 1 often brings to the fancier's mind visions of failures in the past, and the more one is disposed to dwell on the weak points the more is one resolved to attempt to do better in the future. Let fanciers commence 1909 with the resolution that they will do their best, and see that they hold fast to that decision, so that with seasonable weather and ordinary "luck" their results may be satisfactory.

THE NECESSITY FOR INBREEDING.

To the Editor of THE ILLUSTRATED POULTRY RECORD.

SIR,—Periodically this question of inbreeding comes up, and someone who has absorbed theories from the impracticables, who have never had experience, warns the beginner that inbreeding is the most dangerous thing known to poultry men.

If inbreeding were so dangerous there would be very few healthy fowls in this or any other country. It is an absolute fact that no great excellence can be obtained in breeding any sort of stock without inbreeding, and there is very good reason for thinking that the more family lines are crossed, under favourable conditions, the stronger the valuable qualities of the strain.

It is not inbreeding *per se* that is dangerous. It is inbreeding without thought; indiscriminate matings in which no thought is given to the characteristics of the parent stock as to health, vigour, and the power to transmit its excellencies to its progeny.

No breed of fowls has ever been perfected without close and continuous inbreeding. It is impossible to perfect a strain and make it distinctly better without crossing family lines through and through. The well-known Felch breeding chart, which has become the standard example of how to maintain blood lines, shows how inbreeding may be continued indefinitely without deterioration.

To do this the breeder must understand how to select vigorous stock. Both Mr. Felch and Philander Williams have inbred their famous strains in America for more years than most of us have lived, and still in their yards may be found some of the most vigorous birds in the world.

I revert to this matter at this time because many a beginner will make the mistake of selling a good male, because if he keeps him he must inbreed or not use him at all. If anyone has a male bird which has shown strong prepotency which has decisively marked his chicks with improvement, he should be kept and bred back to his best daughters another year in order to fix his high qualities on the flock and increase its value.

When mating fowls which are closely akin, care should be taken to mate the most vigorous specimens, for this will tend to increase the stamina of the family, while to admit weakly specimens to a pen which is to be inbred is to open the way to decreased vitality, as the tendency to strength or weakness descends as well as other characteristics.

Don't be afraid to inbreed if you have a stock worth perpetuating. It is the only way to reach a condition which will lead to close reproduction. The fewer families in a strain, the easier it is to make it what the breeder wants it to be, but, as above stated, only the most vigorous and healthy birds should be used for the purpose.—Yours, etc., E. H. Turrell.

Ide Hill, Sevenoaks. December 16, 1908.

NOTES ON EXHIBITIONS.

THE season for the exhibition of poultry may be said to terminate with the advent of the New Year. Of course, there will be the usual Scottish New Year's Day shows and a few "stragglers" during the present month; but most of the best birds are now in the breeding pens, and there are few fanciers who would care to disturb them when once mated. Some so-called "pot hunters" generally run a team of young fowls especially for the late winter exhibitions; but at the tail end of the show season one does not expect extensive entries of good quality specimens.

The first of the December events was that at Birmingham, in connection with the fat cattle show. The Birmingham fixture has for long been known as "the mother of poultry shows," and perhaps rightly so, since the late show was the sixtieth annual. The most striking feature in connection with it was the fact that the executive reduced the entry fee in the open classes from eight shillings to six shillings; and although the increase in the entry was not so large as was anticipated, it was satisfactory to find that the total for 1908 was about 350 in advance of that for last year. It was at least encouraging, more particularly so in view of the fact that short entries have been the rule rather than the exception at this season's exhibitions. It is impossible, with the space at our command, to give even a brief *résumé* of the fixture. Suffice it, therefore, for us to record that, taking the show as a whole, it was most successful and interesting, and there was a very decided improvement in the quality of the stock.

Following closely on Birmingham Show—in fact, clashing with that event—was York on December 1, 2, and 3, the Christmas exhibition of the Yorkshire Society. On the whole, entries were satisfactory, but in some classes they were not numerically strong. Much interest was taken in the first show of the newly-formed White Leghorn Club. About ninety birds were exhibited in the six classes for the variety; and it is noteworthy that the strongest was the hen class provided for novices, where the total was thirty-two. The quality of the exhibits hardly came up to our expectations; and in view of the fact that the club aims at the so-called modern type of Leghorn, there were too many variations to please the critics. The Minorca Club Show, the twenty-second annual event of the club, was very well patronised, and here again it may be remarked that the best filled class was that for novices (hens), although the open cockerels and pullets ran it very closely. We thought that the United Wyandotte Club Show hardly came up to expectations; rather, that it fell far short of previous fixtures of the club. The open classes cannot be said to have been a conspicuous success, and, had it not been for the novice section, the average entry would have been low. As a result, in many classes the fourth and fifth prizes were not awarded, which is a somewhat unusual proceeding at a club show, while the Silver Pencilled and Black old bird classes had to be cancelled. In sections beyond these three club shows the entry and quality were up to the mark, while in the selling classes competition was very keen and there was a capital display of cheap fowls on view.

On the opening day of York the Black Leghorn Club Show was held at Hanwell, Middlesex, in conjunction with the exhibition of the Ealing Fanciers' Society. There was a rather better entry in the four classes for open competition than at the 1907 event, but the two novice classes were not so well patronised as at Bolton last year. No complaint can be made with regard to the quality of the exhibits, however, since it was of the best; and we have seldom seen a more perfect Black Leghorn than the first prize pullet, which was unanimously awarded the Poultry Club cup for the best Leghorn in the show by the four judges. There appeared to be a tendency to white in face in many of the cocks and cockerels, which, according to the standard, is a defect, and this requires attention. The Variety Orpington Club Show was also held at Hanwell and there was a very representative display in the section, despite the recent boycott in the Spangled variety. The colour of the Whites was not particularly good, too many of the birds appearing weathered on top, while the headgear of the Jubilees requires attention. There was a marked

improvement in Spangles, but there is still a tendency to white under-colour and shanks. The winning Jubilee cock is probably the best yet exhibited, and, besides securing the Poultry Club silver medal for the best bird in the club section, it was awarded the Poultry Club cup for the best Orpington in the show over the Buffs and Blacks, which is probably a record. In the open classes of the Hanwell Show there was not a good entry, and no fewer than twenty-six classes had to be cancelled, while the total for the remaining fifty-three was 484. But forty-two poultry shows were held during the first week of December, consequently some had to suffer. The Blue Langshan Club Show was held in conjunction with the Wandsworth Fanciers' Association's exhibition on the 1st ult., but it was not a very important affair, and the entry of young birds (a round dozen in two classes) was poor. In other sections, too, Wandsworth Show was not strongly supported. The best-filled class was that for Black Langshan hens, with twelve entries.

The most important shows held on December 2 were at Redhill (Surrey), Tavistock (Devon), and Southend (Essex), and, generally speaking, they were successful. It was a pity that on the same day Eynsford clashed with Gravesend, since both suffered. The London Minorca Club Show was held at Walthamstow on the 3rd ult.; and although on account of the unfortunate clashing of dates, and more particularly perhaps of the Minorca Club Show at York, the entries were not quite up to the average numerically, the quality of the exhibits was exceptionally good. It is satisfactory to note that the club has done good work for the Minorca in the metropolis, which was fully demonstrated in the vastly improved specimens on view, many of the birds being big winners.

There was a meet of some Scottish specialist poultry clubs at Cupar (Fife) on December 5, the Game and Game Bantam Club, the Leghorn Club, and the Minorca Club holding their events in conjunction with the Cupar Ornithological Society. But the hall in which the exhibition took place was somewhat inadequate to accommodate the birds in a satisfactory manner, with the result that the pens were placed tier upon tier to a great height, while the aisles were scarcely more than a yard wide, which was decidedly inconvenient for visitors, and rendered it a difficult task to examine the birds. The Game Club section was fortunately staged in a good light, and the entry was probably a record one, although the Indian Game were scarcely representative with five entries in two classes. The Leghorn Club section was staged in the worst position in the hall, and the Browns were in a particularly bad light. The best filled class was that for Brown pullets, with twenty-two entries, while the weakest classes were the two for any other colour (white, brown and black getting separate classification) with one cockerel and two pullets. In the Scottish Minorca Club Show the entry was very representative, and the quality of the exhibits has never been excelled; in fact it was a meeting of champions, and many well-known prize takers penned in a fit condition to win had to remain cardless. The section was located in a good position and the birds could be viewed with ease.

No fewer than nine specialist poultry clubs held their annual shows in connection with the Leeds Smithfield Club's Forty-ninth Show on December 8, 9 and 10, and with the close of that event the big exhibition season may be said to be at an end. In some instances the birds were beginning to show signs of distress, which is not surprising since many of them have done the round of almost all the important events in addition to some of the minor ones. As to the club shows, that of the Old English Game was not very good numerically, although some excellent birds were penned and competition was very keen; the exhibits were unfortunately staged too low and the task of the judge was thereby increased. To be seen to perfection Old English Game should be penned in a show about four or five feet from the ground. The tenth annual show of the British Minorca Club was an undoubted success, and although the entries were scarcely so numerous as those at last year's event quality was well up to the mark. Two classes were provided for the rose-combed variety, but the response was decidedly poor, the entries being three cocks and four hens. However, good support was given to the novice classes, so the average was not so bad. There was an extensive classification for the Hamburgh Club's Show, but the result cannot be written down as great; and as a whole the event did not compare very favourably with some of the previous shows, although there was a fair sprinkling of really choice specimens on view. In the Plymouth Rock Society's Club Show the classes for the barred variety were the strongest, but there was by no means a poor display of Buffs, Whites, and Blacks. The Bantams, however, were certainly not representative of the popularity of this handsome variety, the class having only three entries. There were eleven classes in the Black Wyandotte Club Show, and the response was 182 entries; and as better birds of this variety have never been brought together it can be imagined that the event was highly successful. The first show of the Blue Leghorn Club may be chronicled as very satisfactory as regards entries, but there is still room for much improvement both in colour and type. The variety is, however, quite in its youth, and, after all, a standard suitable to all parties was not decided on until the meeting at the Crystal Palace Show in November. The show of the United Ancona Club did not strike us as being so large as those of former years, but nothing was lacking in the quality of the exhibits. The rose-combed variety appears to be making steady progress; and it is pleasing to note that the club still has the support of the novices, there being thirty-two entries in the two classes provided for them. The Leghorn Club Show, numerically considered, was somewhat disappointing, although, on the whole, the quality of the birds was very good, and there were some particularly fine Browns and Whites on view. Cuckoos were perhaps the best filled classes, which is somewhat strange, since the variety is not by any means a favourite. It is surprising, too, to find that the club encourages Partridge Leghorns, which are, with all due deference, coarse Browns; and it would be interesting to know what standard the judge used to help him to arrive at his conclusions.

Early Chickens.

With the turn of the year the cares of the chicken rearer increase more or less rapidly, and those who adhere to the natural method of incubation, and believe in the ultimate benefit of a hardy open-air system of rearing, will find it necessary at this season to temper the wind to the unfledged. Although in some circumstances it is absolutely necessary to use brooding appliances, it is usually better in the first instance to make full use of the available broody hens, and, whenever possible, to coop them with their broods out on short turf; but with snow or persistent rain it is inadvisable to subject the newly-hatched to such conditions when suitable shelter is at hand. In raising early chickens for the spring trade, we have found that a thrashing-floor in an old barn is very adaptable, in that it provides all the scratching and sheltering advantages of a large brooding house without any material loss of open-air conditions—and any large open-fronted building will do as well, provided there is a run out on to the grass and the floor of the building is dry. Several coops may be accommodated under one roof and the floor suitably littered with scratching material; but there should be no actual confinement and the cooped hens will prevent the young birds from wandering too far. It is in such circumstances that a dry food mixture is beneficial, to encourage the use of the shelter in bad weather, but not to supersede the soft food; and although the removal may involve some labour, the coops should be set outside when the conditions are favourable. More elaborate arrangements may, of course, be necessary in some cases, but the above will serve the purpose of the ordinary farm rearer well enough. To do more is to increase the difficulties of the inevitable hardening-off process, and, having taken reasonable precautions, it is better to lose the weaklings at the commencement than to rear them for subsequent loss or an unprofitable maturity.

Feeding Them.

There are many suitable foods upon the market for the rearing of young chickens, but for all-round commercial purposes there is no better staple article of diet than Sussex Ground Oats. This excellent meal should not, however, be fed alone to the chickens, but mixed with enough sharps to make the mixture crumbly—a consistency which cannot be attained with the pure ground oats on account of the tendency to become sticky when moistened, and consequently clogging and impossible for the feeding of stock. A small allowance of meat is sometimes helpful in early rearing, but in normal circumstances and with the constant use of ground oats it is seldom thought necessary by practical producers. Biscuit meal is, however, a good food for use at the beginning, and boiled wheat may very well be fed once daily. The latter should be boiled until the grains begin to burst, then strained and dusted over with meal to prevent stickiness and undue moisture; if this is fed warm in cold weather it is much appreciated, and many rearers use it as a last feed at night. The water question is no doubt a vexed one, but in our opinion the young birds derive sufficient moisture from the soft-food mixtures; but it should be supplied to the cooped hens in high, narrow-necked pickle bottles, which the chicks cannot reach. The anxious rearer usually overfeeds his birds, but the experienced hand seldom gives more than four feeds daily at any period—with a handful or two of small seeds upon the scratching-floor in bad weather.

Stock Geese.

In view of the general desire to produce early "green" goslings in moderate quantity, it is necessary to get the geese into a laying condition as soon as possible next month, but the commencement of laying is too often hindered by the policy of leaving the birds to look after themselves. The stock birds should now be fed rather generously, but not fattened, using the ordinary meals and grains supplied to the common domestic fowls. It should, however, be remembered, that geese are essentially vegetarians, and in winter well-chaffed and scalded clover-hay may be mixed in their soft food. Swedes may also be used with advantage, but cabbage greens are not usually satisfactory for these birds.

Ducks and Ducklings.

Ducks' eggs (of a suitable breed or cross) should be put down for incubation as soon as produced, in successive batches, if the average of the season's prices is to be satisfactory. Although February is nominally the beginning of the duckling season, it is an excellent month in which to increase hatching operations, and with suitable feeding the February-hatched birds usually mature at a favourable period for marketing. If hens' and ducks' eggs are produced out of proportion to the number of available broody hens, it will be preferable to set the ducks' eggs under such hens as are ready and to put the hens' eggs in the incubators. Some operators are very successful in the artificial incubation of ducks' eggs, but in most cases the arrangement suggested is probably better than the reverse method. The stock ducks should do very well now upon a diet of barley-meal, sharps, and lean meat. In many particulars the winter rearing of ducklings is less difficult than that of chickens, especially in the matter of accommodation; they may be reared in considerable numbers in the confinement of sheds, and the amount of brooding they require is much less than is essential to the well-being of chickens. With suitable buildings the inclemency of the season is no serious hindrance to rearing, and where a constant supply of eggs is procurable they should be incubated without delay or hesitation.

Brooders.

Whether brooders are used entirely or only in addition to hens, the movable type is most generally preferable for a number of reasons. As is the custom with coops, brooders should be constantly moved in order to give the chickens the advantage of clean ground, and no pains should be spared to keep the interior of those appliances clean, giving special attention to the brushing of hover curtains and such apparently insignificant details. It is useful to have a handy form of run or easily-moved wire-netted hurdles for use in connection with a brooder during the first few days of a brood's occupancy; but such confinement must be as far as possible dispensed with when once the birds know their own home. Although the nights may be cold and the operator over-anxious regarding the maintenance of heat, it is imperative to avoid over-heating and to harden the birds off as rapidly as is consistent with the eeasonable conditions.

THE FARNLEY HALL POULTRY ESTABLISHMENT.

YORKSHIRE has for a long period of time been famous for its poultry keepers, men of all sections of the community, and it is not surprising therefore that manufacturers and others have given attention to this question. Amongst those who have within recent years taken a really practical interest in the development of the poultry industry is Mr. Robert Armitage, M.P., whose home at Farnley Hall, some five miles from Leeds, we recently had the opportunity of visiting.

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INTERIOR OF BROODER HOUSE.

It must be remembered that Farnley is in a stone country, and one thing which impresses the visitor is the substantial nature of the buildings. A short distance from the Hall we came upon the old dog kennels, with an adjoining dwelling, where lives Miss Tordoff, who has charge of the poultry yard; the

kennels are used for store rooms and here are situated the incubators.

In a space behind we found a brooder house, designed by Mr. Armitage himself, which presents several most interesting features. Unfortunately our photo was not a success so far as the exterior is concerned, but one of the illustrations shows the interior. The first part of this house has a four-compartment continuous brooder, but the second part, which is the newer, contains individual brooders, also designed by Mr. Armitage. These are seen in the illustration, and each is independent of its neighbour.

The brooders, which are fitted in convenient cases, consist of flat copper tanks, in the centre of which is a large circular hole, and upon this is placed a glass cover so that it can be moved along and afford a greater amount of ventilation. Above that is a hover and the lid of the brooder. Heat is obtained from a gas jet outside, and as the tank is carried over this jet the water is heated in that way. The brooder house has a passage way behind, covered runs in front, and also open yards, and apart from the question of capital invested this is one of the best brooder houses we have seen.

Passing along the road behind the garden we came upon the breeding pens, of which there are sixteen, in sets of four. The houses, as will be seen from one of our illustrations, consist of scratching sheds, and there are four compartments in each house. These are of the usual order, with open fronts, and the ground before each block is so divided that every pen of birds has a large grass run. As the ground here is somewhat sticky, asphalt walks have been laid down, and the grass is regularly swept and kept in very good order. We were surprised at the excellent nature of the turf even in the autumn of the year.

Beyond, right on the top of the tableland, which has an elevation of about 400 ft., we came across a large laying house, which is divided into ten compartments, nine of which are used by the birds and one is for stores. It has a passage way down the entire front and consists of scratching sheds fitted throughout with trap nests. The whole house is 15 ft. in width and has been built entirely of the wood from German glass cases, which can be bought pretty cheaply in the great centres of population.

One of the features with which we were most pleased was the house's double runs, back and front, so that the ground can be given a rest and all danger of

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SCRATCHING SHEDS, FARNLEY HALL.

tainted soil avoided. It is certainly an excellently designed house, upon which the owner may be congratulated.

Away beyond are the fields, and there we found portable houses with good flocks of birds. The breeds kept at Farnley Hall are Buff Orpingtons, Black Leghorns, with crosses of Faverolles and Buff Orpingtons, and of Indian Game and Buff Orpingtons for table birds. Mr. Armitage has not been content with merely carrying out this establishment for his own pleasure, but has done a great deal in the district, where the improvements in the methods of poultry-keeping have shown how much can be accomplished by influence and example.

BREEDING PENS, FARNLEY HALL. [Copyright

THE USE AND OPERATION OF INCUBATORS.

We say but little of hatching chickens by steam, although this plan is adopted in some poultry establishments. Still, as little more has been done than mere experiment, a full description may pardonably be omitted.

THIS extract from a treatise published between sixty and seventy years ago is curious reading beside the advertisements of present-day manufacturers, the huge business they represent, and the advanced knowledge indicated by discussions regarding carbon dioxide and the other problems of the subject. Although the section of this magazine dealing with "Education and Experiments" sufficiently shows the continued need for investigation and experimental incubation, we have long passed the stage at which "we say but little" about artificial methods of production.

It is, of course, perfectly true that those whose production makes the bulk of the supply of English poultry—the farmers and cottagers—rely almost entirely upon the natural method of incubation, but it must be remembered that the individual output of these poultry keepers is comparatively small: and it is also true that, when the production of a single establishment exceeds certain limits, it is found that recourse must be had to artificial appliances, otherwise the production is uncertain, unequal, and insufficient to sustain the importance of the undertaking. The modern farmer is fast losing the prejudices of an older generation, and machinery now occupies an important economic place in all departments of agriculture. The agriculturist of the new era, understanding something of the importance of poultry production, is acquiring a fuller realisation of the significance of the incubator in relation to his output; and it is probable that the usual equipment of the farms and small holdings of the future will as inevitably include an incubator as a churn or a separator. Meanwhile those who have specialised have shown the way, and these notes are for the information of those who would follow.

It is probable that most poultrymen (but by no means all) prefer to use hens when they are available, although the one-time stock objections to the use of machines no longer hold good in face of labour-saving and more efficient devices; but, however that may be, hens are not always ready when wanted, and a shortage is sure to occur some time during the season. In such circumstances he whose experience has been gained with incubators of reliable makes never hesitates to turn to the machines; and after all, apart from the responsibility, the actual work involved is a trifling matter for the methodical man.

In the selection of a machine the choice is wide enough to satisfy (if it does not puzzle) the most exacting, and the comparison of a dozen or more illustrated catalogues will convince the most sceptical that the good points outnumber the bad; and that, as in the matter of selecting a breed for egg production, the most that can be said impartially is that there is no best. The analogy may be carried further, and it may be said that in these days of keen competition it is only the fit that survive; but, having said this, the decision must remain with the intending purchaser, whose resolve to employ an incubator implies intelligence enough to select the most suitable for his purpose.

Apart from the method of heating, whether by tank or warmed air—the selection of either of which must depend upon individual requirements—the means applied to the regulation of heat demand some consideration, and, just as there are two principal types of machines, so there are two principal types of automatic regulators—the bar thermostat and the liquid thermostat or capsule. Whichever is used, the

result of the action is produced in practically the same way, and the principle involved in both is the same, viz.: the regulators depend for their action upon the heat of the hatching chamber. A good machine has a good regulator, and, having implied that most are good, the application is fairly general; and when once a machine has been thoroughly regulated in its new situation it will usually work better without undue subsequent interference. In this connection the question of situation is naturally an important one, and experience tends to the conclusion that books of instruction are not always reliable in this par icular. Although there may be no need for a specially constructed incubator house, it should be realised that a room in a dwelling house is not by any means ideal for the accommodation of such machines. The special requirements include the possibility of the maintenance of a fairly even temperature, a suitable system of ventilation without the introduction of draughts, and a sufficient stability of structure to reduce vibration to a minimum. If these conditions exist in a cellar, without the drawback of any excess of moisture, such a situation will be found more suitable than that of a chamber in a dwelling, or any place in a range of farm or out-buildings; but if a cellar fail to meet any of the essential conditions, it is if anything worse than other situations. Despite the great importance of stability, and an equable external temperature, the most vital requirement is that of a constant and sufficient supply of pure fresh air; in an ill-ventilated chamber the oxygen of the atmosphere is largely exhausted by the lamp, to the detriment of the living germs within the machine, and those chickens that hatch under such conditions of incubation are debilitated from the commencement of existence.

The actual quantity of oxygen requisite during embryonic development is not very great, but the supply must be constant; and it appears probable that no cooling of the eggs is actually required to ensure the mere fact of hatching, and it is likely that the chief importance of the daily airing consists in the increase rather than the maintenance of vital force. However that may be, it is an ascertained fact that due attention to the cooling process, and some regulation of its period, relative to other factors, ensures the hatching of a stronger batch of chickens than is otherwise obtainable; and the best results are secured by the greatest amount of cooling that is consistent with punctuality as regards the hatching date—which is finally ascertained by experience and correct judgment.

The above are among the most salient points involved in the successful operation of incubators, but there are innumerable details—mostly referring to individual machines—which are as a rule succinctly dealt with in the directions supplied by the several makers.

BUFF ROCKS.

THE report issued for two months ending November 30 of the Street Laying Competition records that a pen (No. 79) of Buff Rocks were then holding the premier position with a record of 240 eggs, or an average for six pullets of

forty during sixty two autumn and winter days. That, however, is only part of the story. The total weight of eggs is given as 29 lb. 11¾ oz., a shade under 2 oz. In October the average weight was a fraction under 2 oz., and in November a fraction over, so that in this case we have not only number but marketable size. The value of the eggs for the two months was £1 11s. 7d., or an average for each pullet of 5s. 3¼d. Breeders have informed us that the Buff Rocks lay the largest eggs of all that race, which is a great recommendation, as they are good in colour of shell. The American type, from which many of our best birds are descended, appear to have been made by a mixture of Buff Leghorn, Buff Cochin and Light Brahma blood, but frequently Buff Orpingtons with yellow legs and flesh are exhibited under the name of Buff Rocks. We give herewith reproductions of two typical American specimens, belonging to Mr. Orth, Lebanon, Pa., U.S.A.

GUINEA FOWLS.

The Management of the Breeding Stock.

THE edible qualities of guinea fowls are so excellent, and there is so satisfactory a demand for them during certain seasons of the year, that it is very surprising that more attention is not devoted to this branch of industrial poultry-keeping. The raising of this class for poultry produce has never become at all popular in this country, although there is little doubt that when the conditions are favourable it is a very profitable and by no means difficult branch. We were discussing this question with a London dealer at the Smithfield Table Poultry Show, and asked him whether he experienced any difficulty in disposing at good prices of the birds that were sent to him. He replied that he could easily sell half as many again as he received, and that his great difficulty was in obtaining suitable birds in sufficient quantities. The flesh of the guinea fowl is of exquisite flavour, closely resembling that of the pheasant. The body is plump and well proportioned, and the amount of bone and offal to flesh is comparatively small. It is unnecessary to fatten guinea fowls; in fact, the quality and flavour of the flesh is, in a large measure, ruined by so doing. Prices for good specimens range high, and they are mostly disposed of among the well-to-do, there being rarely any difficulty in obtaining from 3s. to 3s. 6d. each. Although seemingly costing a good deal, a guinea fowl is really a cheap dish, as it carries so large an amount of flesh and so small an amount of bone and offal. During the breeding season there is a fairly ready sale for the eggs at about 3s. per dozen, and this side of the industry is one that might be developed with advantage. There is always a very good demand for guinea fowl eggs for consumption and they are a great delicacy. Their price averages about 1s. 6d. to 1s. 9d. per dozen.

It is always well to realise one's limitations as well as one's opportunities, and it is useless attempting to undertake this branch if one does not possess an abundance of space. Guinea fowls are exceedingly wild, and cannot thrive at all well in confinement. Keeping them in runs has been tried over and over again; but in no case, so far as we are aware, has it succeeded. The adults soon become listless, while the chickens involve considerable difficulty in rearing, besides which they rarely grow up strong and healthy. An objection that many people have to guinea fowls is that they possess such an intensely disagreeable cry, the hen making a noise that is more like a rusty hinge squeaking than anything else.

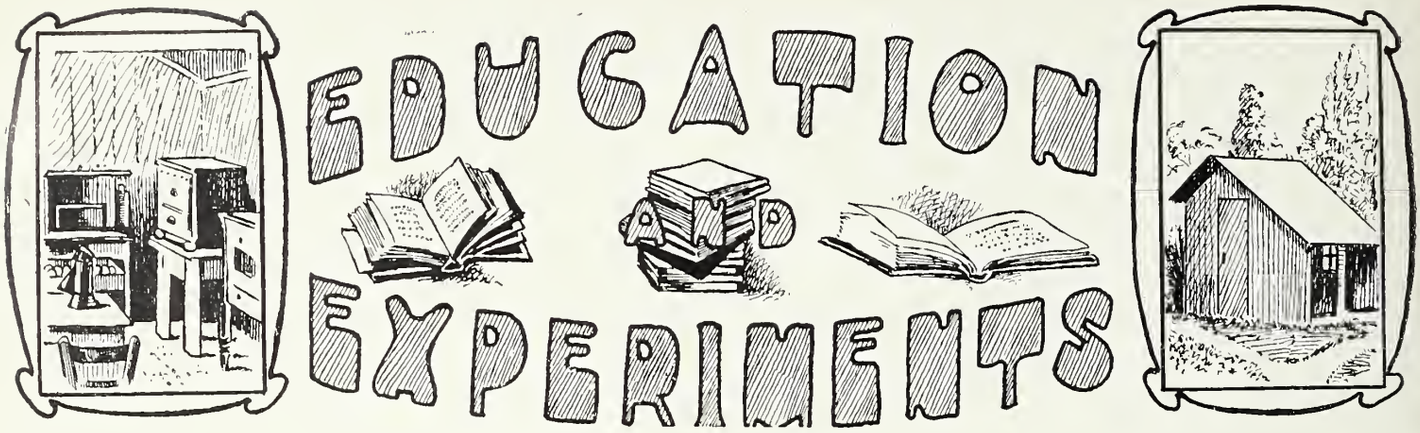
Guinea fowls thrive best upon a medium soil, resting on a gravel sub-soil. Heavy clay is unsuitable and renders rearing extremely difficult; very light, sandy soil is likewise unsuitable, owing to the fact that it contains so small a proportion of animal or vegetable food. Upon a good soil guinea fowls are able to secure a large proportion of their own living, as they are excellent foragers, wandering miles in search of worms, grubs, insects, &c. They never seem to tire, and are probably the most active of all varieties of poultry. While guinea fowls are hardy, they cannot withstand great extremes of temperature, and cold or very exposed situations should be avoided. Under favourable conditions the chickens are comparatively easy to rear, the most critical stage of their lives being during the first fortnight after hatching; once successfully past this period, they are extremely hardy.

Unlike ordinary poultry, guinea fowls are monogamous in habits, always mating in pairs, and thus an equal number of cocks to hens must be provided. The male bird remains with the same hen throughout the entire season and generally selects her again the following year. Guinea fowls seem to become peculiarly attached to one another, and we have known cases in which a hen has died early in the breeding season and the cock has remained faithful to her until the following year. If there should happen to be a greater number of hens than cocks the latter sometimes fertilise the eggs of the former, but they do not remain with them, returning at once to their special mates. Generally, however, if there are more hens the eggs from the extra number prove infertile. Guinea fowls usually remain in flocks, and it is remarkable how well they agree. The cocks rarely fight among themselves, but this is probably explained by the fact that each bird has its own special mate. With other fowls, however, they are exceedingly quarrelsome.

The laying powers of guinea hens vary very greatly according to the strain, some being extremely prolific, producing as many as 100 or 110 eggs in a season. Cases are on record in which an individual hen has laid upwards of 120 and even 130 eggs in a season, but such birds are few and far between. As a general rule, provided the birds are well looked after, they can be depended upon to lay from 75 to 90 eggs in the twelve months. The hens usually commence to lay about the end of March or April, and the eggs should be removed each day as they are laid. This is not always an easy matter, however, as almost invariably places are selected for nests that are very difficult to discover. The hens are exceedingly shy and nervous birds, and they always choose a spot that is very securely hidden. When the nest is found, and if there are several eggs therein, a few should be removed, and one each day as more are laid, otherwise when the hen has produced a dozen or fifteen eggs she will want to sit. When they are regularly removed, however, she will continue laying. The early eggs should be placed under ordinary hens, quiet and steady birds being selected for the purpose. Later on in the season the guinea hen herself may be allowed to sit, and she invariably makes an excellent mother. The period of incubation is twenty-eight days, and during this time the hen should be disturbed as little as possible.

There is nothing special to note as to the feeding or the housing of the adult guinea fowls, as these points of management are similar to those employed for ordinary fowls. It is a mistake to allow the birds, as many do, to roost in the open at nights, since this reduces the egg supply, besides making the birds much wilder. The rearing and marketing of guinea chickens will be dealt with in a succeeding issue.

Readers are requested to mention THE ILLUSTRATED POULTRY RECORD when replying to advertisements.



THE I.P.R. SERIES OF RECORD SHEETS.

BELIEVING that there is a real need for the publication of up-to-date charts for trap-nested egg-layers, for incubators, and for sitting hens, we have designed a series of charts for the purposes named, and we beg to draw readers' attention to our advertisement on page xiii. A few words in explanation may be permitted to describe the complete record which may be kept by their use. On the laying chart spaces are allowed for giving details as to the month, year, number of pen, breed of birds, age of females, pedigree number of male, pedigree number of females, and for particulars as to when the pen was mated. Below, the chart is ruled off for twenty birds, giving a column for each day of the month, for the total eggs laid by each bird during that period, the number of eggs incubated, showing number fertile, number hatched and percentage hatched, number sold and number returned infertile, together with a column for number of eggs laid previously and for the total number of eggs to date. A special line is reserved for recording any eggs laid outside the trap-nests in which case the number of the hen may not be known. Instructions for keeping this chart are printed at the bottom. The incubator chart has been designed for use with the laying chart and provision is made for keeping the exact result of eggs laid by four pens. Columns are allowed for morning and afternoon attendance, showing date, time, temperature of incubator, temperature of room, and maximum and minimum temperature outside. This latter is a very useful record to keep, as by it the ventilation of the incubator room may be regulated. The charts for use with sitting hens are designed so that all necessary particulars may be kept accurately.

Instruction in Poultry-keeping.

We have received the latest prospectus from the University College, Reading, and the College Poultry Farm, Theale, giving details of the courses to be held this year. Students can either take a combined course of theory and practice or they can devote their whole attention to the practical side. A five weeks' combined course commences on February 18, a ten weeks' combined course on April 22, and a second ten weeks' combined course on October 7 ; during the intervening weeks the farm is open to students for practical training. It is pointed out in the prospectus that it is desirable for students to supplement the lecture courses by taking a few weeks' additional practical work. We also note that there is a special year's course, including, beside theoretical and practical poultry teaching, allied agricultural subjects. Certificates are granted to all students who satisfy the examiners at the examinations held at the termination of the combined courses.

Poultry Scheme in County Kildare.

The scheme organised by the Kildare County Agricultural Committee is a very complete one, and good work has been done by the instructress. We hear from Miss M. T. Stafford that the number of egg stations in the county is not great, being only fifteen for the production of fowls' eggs, five for turkeys, and two for geese, but that the classes held for teaching the practical side of poultry-keeping are doing very good work. The classes are held in rural districts and extend over three weeks, and are usually attended by ten or a dozen pupils. The lectures include the treatment of such subjects as (*a*) breeds most suited to the district, (*b*) houses and housing, (*c*) chicken-rearing, (*d*) hatching by the natural method, (*e*) feeding, (*f*) selection of and testing incubating eggs, (*g*) the marketing of eggs, (*h*) egg preservation, and (*i*) fattening. The practical work deals with plucking, trussing, packing, testing eggs for market, and any other points which may be deemed advisable by the instructress. Visits are also made to the poultry yards of the pupils and neighbouring poultry keepers for demonstration work.

Poultry Education in County Monaghan.

The improvement which has taken place in Ireland of recent years in the development of the poultry industry has been enormous. The very fact that the export of poultry produce now ranks second in value proves that a great increase has been made in the quantity of eggs and poultry raised, and, at the same time, reports from the large markets in England indicate that the quality has also advanced. Those counties which were the first to encourage the poultry industry are now reaping the benefit, but the others, which are at present only conducting the pioneer work, labour with the knowledge that improvement will come in the future. County Monaghan is a typical example of the latter class; but we understand that egg-distributing stations are being established and instruction given; and as Mr. A. O'Brien has undertaken the task of acting as instructor, it is to be expected that development will be along right lines and that improvement will soon follow.

The County Meath Poultry Scheme.

We are glad to hear from Miss L. Quinn, the instructress for County Meath, that the poultry scheme has been sanctioned by the Committee of Agriculture for 1908-9. The work has prospered of late and the improved poultry management is very noticeable, but there is still room for further development and, moreover, the labour necessary to maintain the industry at the high level which it has already attained is considerable. The scheme includes the establishment of twenty egg-distributing stations, twenty-five turkey stations, and five geese stations, and courses of lectures are being arranged in various localities in the county. A successful class has been held during the past month at Slane, at which both practical and theoretical instruction has been given, the students having taken keen interest in the work.

Feeding Experiments.

We have pleasure in giving the following quotations from Bulletin No. 126 (1908) of the Rhode Island Agricultural Experiment Station:

> Effect of Bone Constituents on Concentrates for Winter Chickens.—From time to time the writer has been impressed with the lack of definite knowledge, among poultrymen and investigators alike, concerning the most suitable and efficient commercial concentrate to use in a ration for growing winter chickens, and it has been to meet this want that the experiment herein outlined was undertaken.

The general conclusions arrived at are as follows:

> 1. That the phosphorus and lime in the ration are fully as necessary as the protein. The addition of a small amount of bone-ash and carbonate of lime multiplied the efficiency of the protein by two and one-half in the gluten-feed ration in the period L, and a very decided gain was noted from its use in every case excepting that of cotton-seed meal ration in period 1.
>
> 2. That cotton-seed meal cannot be recommended at any price as a concentrate to form a considerable portion of a ration for chicks. The chicks which died did not exhibit the symptoms of poisoning which have been unquestionably noted in connection with other animals which are poisoned by cotton-seed meal.
>
> 3. That even if the addition of commercial material, such as ground bones or floats and limestone, to the ration could render protein in the form of milk, albumen, or gluten, feed equal in efficiency to protein in the form of animal meal, it might not be possible to induce the chicks to eat sufficient food to cause them to grow as rapidly as those receiving animal meal. It must be recognised, however, that animal meal, like beef scrap, is widely variable in character and quality, and that with material inferior in taste, odour, or composition equally good results might not be secured. . . . ."

In the same Bulletin some results are published as a result of experiments carried out in connection with crate feeding with cockerels and trough feeding and cramming with turkeys.

The Composition of Feeding Stuffs.

Bulletin No. 127 (1908) of the Rhode Island Agricultural Experiment Station contains some interesting particulars with regard to the analysis of various commercial feeding stuffs, and also mentions the results of certain experiments in feeding which have been carried out on the Massachusetts and the Maine Stations. The findings of the former station relative to the best combinations of feeds for laying hens are as follow:

> First, that, provided fat is abundant in the ration, high protein content is not essential; second, that, if the fat content of the ration is low, a large proportion of protein in the feeds used appears to be much more essential; and third, that a large proportion of fibre in the ration used is unfavourable to a good egg product.

The Embryo Chicken.

Monsieur E. Garpiaux, of the State Institute of Chemistry and Bacteriology in Gembloux, has published a very interesting paper on the subject of the assimilation of the phosphorus and lime during the embryonic stage of the chicken. After explaining fully the work which he has carried out he concludes by saying it is his opinion that:

> 1. During the embryonic development until hatching, the chicken utilises the phosphorus contained in the egg, and if it takes any from the shell it is perhaps only in infinitesimal quantities.
>
> 2. The shell furnishes more than four-fifths of the lime necessary for the building up of the chicken.
>
> 3. It is at the end of the incubation period that the great consumption of the calcium of the shell takes place, and this consumption proceeds equally with the destruction of the Lecithine."

Laying Records at Garforth.

At the Yorkshire County Council farm, in connection with the University of Leeds, the work during the summer of 1908 is a continuation of the experiments of 1904, 1905, 1906, and 1907, so far as the laying varieties are concerned. The following is an indication of the lines on which the work is being carried out.

It is desired in the first place, by a systematic comparison of results, to ascertain the breeds that may be regarded as most useful:

(*a*) As laying varieties, and
(*b*) As general utility fowls,

regard being had to attendant circumstances affecting the suitability of each breed for keeping under ordinary conditions.

In the purchase of the fowls, care has been taken to obtain typical representatives of their particular breeds, without undue consideration being given to purely "show points."

The eggs laid by each hen are registered, and in this way the individual birds are compared, as well as the pens, collectively.

In 1904 the laying powers of the Black Minorcas, White Leghorns, Anconas, Scotch Greys, and Houdans were compared. Later, as representing general utility and laying breeds, the Silver Wyandotte, Faverolles, and Buff Orpington breeds were included.

The following table gives particulars of the eggs laid by each pen of selected pullets in 1904 1905, 1906, and 1907 (January to December inclusive):

Breed.	Average Number of Eggs laid per Bird.					Highest Individual Number of Eggs.				
	1907		1906	1905	1904	1907		1906	1905	1904
	Plts.	Hens				Plts.	Hens			
Scotch Grey	140	134	145	151	162	143	136	150	158	168
Anconas	—	—	—	153	154	—	—	—	169	174
Faverolles	127	125	138	155	—	130	127	149	160	—
Houdan	—	—	—	143	140	—	—	—	159	163
Black Minorca ...	—	—	—	135	129	—	—	—	143	161
White Leghorn ...	145	142	133	125	128	146	144	143	136	141
Buff Orpington ...	—	—	—	105	—	—	—	—	111	—
Silver Wyandottes...	133	137	129	—	—	135	140	142	—	—

The number of breeds kept was in 1907 reduced to five, namely, White Leghorns, Scotch Greys, Faverolles, Silver Wyandottes, and Buff Orpingtons. Of the first four breeds two pens of eight each are maintained, one pen consisting of pullets mated with a two-year-old male bird and the other hens mated with a year-old cockerel. The number of eggs laid by (*a*) pullets and (*b*) two-year-old hens of these breeds was recorded.

It is hoped that in this way good strains of laying and general purpose fowls may, eventually, be obtained, and that young birds and sittings of eggs of established merit may thus be available for sale to poultry keepers in the county, but it is clear that some time will be necessary to fix reliable strains, and in the meantime any sales of surplus stock, or eggs, must be made without any guarantee whatever beyond purity of breed.

COST OF REARING DUCKLINGS.

UNDER the above heading some interesting particulars are given in the December issue of the *Journal* of the Board of Agriculture of an experiment which was conducted at the College Poultry Farm, Theale, Reading, during the early part of 1908. The objects of the experiment were three in number—namely, (1) to determine the cost of rearing ducklings to (*a*) nine weeks old and (*b*) twenty-six weeks old, (2) to note the rate of increase in weight week by week, and (3) to compare the wet mash system of feeding with the dry mash hopper system. With reference to the last, it will be remembered that a report was published in the January, 1908, issue of the *Journal* relative to dry mash hopper feeding for chickens.

Forty incubator-hatched ducklings were used for the test, being divided into lots. For the first fortnight the birds were kept in heated Hearson fostermothers; the second fortnight cold Hearson brooders were employed; during the fifth week they were housed in small cockerel houses, and from that time until nine weeks they were penned in ordinary duck houses with runs giving access to water. In each case grass runs were given, increasing in size as the birds grew larger.

For the first two weeks both lots were fed alike, namely, with wet mash prepared of bran 40 lb., toppings 20 lb., barley-meal 36 lb., linseed meal 2 lb., meat (crissel) 14 lb., at a cost of 10s. per cwt. When a fortnight old one lot of twenty were fed on wet mash and the other lot of twenty on dry mash. In each case the food given was as above. The following were the results obtained:

Cost to Nine Weeks.

	Wet mash.		Dry mash.
	d.		d.
Initial cost of egg	1·5	...	1·5
Cost of working Incubator	0·38	...	0·38
" " Brooder.....	0·28	...	0·28
Cost of Food (average)	14·98	...	15·25
Average per bird	17·14d.	...	17·41d.

Comparison in Detail.

	Wet Mash.	Dry Mash.
Total food consumed.....	2 cwt. 2 qr. 6 lb. 8 oz.	2 cwt. 2 qr. 9 lb. 8 oz.
Total cost of food	£1 4s. 11·89	£1 5s. 4·76
Weight of food consumed for each lb. gained	4·5 lb.	4·68 lb.
Average cost of food per bird...	1s. 2·98d.	1s. 3·25d.
Cost of increased weight per lb.	4·7d.	5·06d.
Total gain in weight	63 lb. 10·88 oz.	60lb. 2·88 oz.
Average gain in weight	3 lb. 2·94 oz.	3 lb. 0·14 oz.
Average weight nine weeks ...	3 lb. 5 oz.	3 lb. 2·2 oz.

The grit is included in the above, and it was found the wet-mash lot consumed rather a larger quantity. No green food was given, but there was an abundant supply of grass in the runs, and this was eaten freely.

From nine weeks to twenty-six weeks the average consumption of food was 49½ lb. at a cost of 3s. 2d. During this period the following mixture was fed as wet mash: Bran, 40 lb.; toppings, 20 lb.; barley meal, 32 lb.; clover, hay, chaff, 20 lb.; costing 7s. 1½d. per cwt. The average weight at twenty-six weeks was 5 lb., though some specimens turned the scale at 6 lb. These experiments go to show that a duck can be reared to laying age for something less than 5s. Mr. Edward Brown and Mr. Will Brown, the joint authors of the Report, state particularly that no effort was made to force growth, as the birds reared were intended for stock purposes. Therefore no indication can be given from the figures available as to the cost of producing ducklings for the table. This must be the object of further experiments.

THE MACDONALD COLLEGE POULTRY PLANT.

EXPERIMENTAL WORK AND POULTRY INSTRUCTION AT MACDONALD COLLEGE.

By Alex. M. Prain, J.P.

IN continuation of the notes on the MacDonald College, St. Anne de Bellevue, Province of Quebec, Canada, given in the December issue, the following particulars as to experiments in winter laying and practical instruction, given by Mr. F. C. Elford, may fitly accompany the illustrations of the poultry equipment, sent by the courtesy of Professor Robertson, Principal of the College.

In the autumn of 1906 250 pullets were bought from two of the poultry stations which had been maintained by the Dominion Government. These pullets were the selections of the fourth year from hens which were good layers during the winters and which had vigorous constitutions. In November these 250 pullets were separated into colony houses, the largest of which measured 20 by 14 by 7 ft. high, and the smaller 12 by 8 by 7 ft. high. The larger houses held about fifty hens and the smaller twenty-five. The houses were only one board thick except at the end where the roosts were placed, where there was a double thickness of one inch boards with tar paper in between. These colony houses stood unsheltered in an open field all through the winter. Though the temperature at times fell to 15° or 18° below zero, the output of eggs which began on November 19 continued to increase, and never stopped right through the winter. Between November 19 and March 31, 10,122 eggs were laid, and it must be further noted that the percentage of fertility rose from 76 to 93. The Rhode Island Reds averaged 51 eggs per hen, Plymouth Rocks 40, Buff Orpingtons 40, Wyandottes 39. Two hens laid 83 and 85 eggs respectively. Seventy laid over 50 eggs each. The health of the hens was excellent throughout. This is by no means a record in laying, but it shows what can be done by a judiciously graded up flock of layers housed on the colony system, in a temperature which is far below anything we have in Britain. No cooked food, hot mash, or condiment of any kind was used. One feed a day on a mixture of dry grain, consisting of wheat, oats, barley, buckwheat, and Indian corn, was thrown down on the floor, which was littered to a depth of three or four inches with cut straw and roughage. Besides the grain the birds had a self-feeding hopper of bran or crushed wheat available as well as access to grit, oyster shell, and meat scraps. When the weather became so cold that the water was frozen in the houses, the water supply was stopped and snow shovelled in instead.

The Macdonald College is incorporated with McGill University, and teaching in poultry is given as follows:

Course 1. Breeds. — Classification of different breeds with regard to their economic qualities, characteristics of laying and table fowls, description of various breeds and varieties. Selection.—Considerations which should influence selection of stock, pure breeds *versus* mixed, advantages and disadvantages of crossing. Housing. — Why necessary? General principles of construction and location, description of various forms of houses and scratching sheds. Natural hatching.—Selection of eggs, preparation of nest, management of sitting hen, testing eggs. Artificial incubation.—Advantages and disadvantages, requirements for success, incubator house, different makes of machines, management of incubators. Rearing.—Naturally, artificially, coops, brooders, winter brooder house, chicken houses, runs. Feeding.—What, when, and how to feed. Table poultry.—Fattening, killing, plucking, shaping, packing. Anatomy of fowl.—Skeleton, skin, muscles, feathers. Internal organs.—Digestive, respiratory,

circulatory. Embryology.—Structure of egg, development of embryo, changes that take place in the egg till chick is hatched. Management of poultry.—When and how to buy and sell, packing and marketing of eggs and table poultry, cost of rearing, accounts, profit and loss. Diseases.—Causes, symptoms, preventives, cures, parasites.

Course II.—Second Year and Advanced Courses—Recapitulation. Summary, of course, with additional details. Origin of poultry.—Early history, domestication and its results, effects of environment, distribution of poultry, development of industry. Branches of Poultry-farming.—Alone, in conjunction with other industries, by householders, egg production, table poultry, raising stock birds, day-old chickens. Breeding.—Variations and their causes, reversion, external characteristics in relation to economic qualities. Ducks, Geese, Turkeys.—Breeds, selection, rearing, housing, feeding, fattening, general management. Economics of Poultry-keeping.—Judicious and injudicious expenditure, appliances, feathers, manure, labour, requirements for further development of poultry industry. There are, besides, short courses of a practical nature, lasting two weeks.

TRAP-NESTING AT MACDONALD COLLEGE.

CARBON DIOXIDE IN INCUBATION.

To the Editor of THE ILLUSTRATED POULTRY RECORD.

SIR,—In answer to your correspondent, T. S. Laidler, on page 123 of the November issue: Yes; shells of eggs are porous, but the action of an egg-shell is just the reverse of what would take place if it consisted of nothing but capillary passages like those in unglazed earthenware.

An egg (*i.e.*, the yolk and white) contains normal air up to the point of saturation. The point of saturation depends on temperature. There will be less air in a warm egg than in a cold one.

An egg is a piece of a hen; there is no question as to which was first, the hen or the egg. The hen being a live one, and the egg a piece of it, the egg is alive from the first.

An egg absorbs or rejects air both alive and dead, according to its temperature, and whether undergoing incubation or not.

An egg rejects or absorbs water according to the amount of moisture in the air by which it is surrounded.

During incubation an egg absorbs oxygen and gives

off carbonic acid gas, provided the air by which it is surrounded is in a normal condition.

If the air around the egg contains carbonic acid gas in an equal proportion to the air dissolved in the egg there will be no exchange. If the proportion of carbonic acid in the air around the egg is greater than the proportion existing in the air dissolved in the egg the carbonic acid will enter and kill the embryo. An egg-shell is simply a perforated box, and plays no part in determining whether the gases shall enter or come out.

The membrane which lines the shell is the medium which serves to transfer the gases either way, but if the membrane could be removed the ovum would still have the power to absorb and give off the gases. The membrane, when dry, is quite air-tight.

The relative condition of the air in solution in the egg as compared with the external air is the whole cause which determines whether any particular gas will come in or go out.

The contents of an egg can be removed and all the phenomena I have described can be rendered visible even to a large audience by a process which I have more than once put into operation.

Carbonic acid travels very readily through wet membranes because it is very soluble in water. It always travels from the side where there is more to the other side where there is less. The smallest excess of CO_2, therefore, inside the egg determines the flow outwards, and since the formation of a molecule of carbonic acid entails the loss of two atoms of oxygen, the interior of the egg becomes short to that extent, and the oxygen which is also soluble in water enters to make up the deficiency.

As soon as an embryo starts development CO_2 is formed and passes out, an equivalent amount of oxygen at the same time gets in, and this goes on the whole time of development.

After the fourth day the transmission is facilitated by the formation of a special membrane (the allantois) which is projected into the space between the embryo and the shell lining. In a few days the shell is completely lined with this temporary lung.

The allantois thus formed lies close to the shell so that the distance the gases have to travel is comparatively very small. When the chicken chips the shell the lungs within the bird assume their proper function.

The heart pumps the blood away from the allantois through the umbilical cord, which in the time between the actual chipping of the shell and the emergence of the bird becomes so attenuated that when the bird frees itself the cord snaps and the allantois is left behind adhering to the shell.

Even the snapping of the umbilical cord is worthy of a moment's thought, for, strange to say, the twist the bird gives it in cutting the shell in twain effectually seals off the bowel cavity, so that in ninety-nine cases out of a hundred there is no leakage whatever.

I have gone a little beyond the question asked by Mr. Laidler because I wanted it to be understood that apart from the life in an ovum osmose takes place even in a tumbler of water or a lump of cheese. Plants containing chlorophyll split up CO_2 and liberate oxygen. All animal life brings about the opposite result. Oxygen is combined with carbon and sent back again into the atmosphere as CO_2.—Yours, &c., CHAS. E. HEARSON.

COLONY HOUSES AT MACDONALD COLLEGE.

Canadian Poultry Shows.

The annual reports of the live stock associations of the Province of Ontario for 1908, published by the Department of Agriculture at Toronto, give evidence of the progress made in poultry matters. Records are given of the Western and Eastern Ontario Poultry Associations and of the Provincial Fairs. The lectures on Poultry subjects given at the latter, dealing with "Incubation," by Prof. Day; "Winter Egg Production," by Mr. L. H. Baldwin; "The Colony House," by Mr. F. C. Elford, together with reports of the judges, make very interesting reading.

Scalding Table Poultry.

The evil practice of scalding fowls before plucking is very little known in Europe, but is very common in America. Sheer indolence is the only excuse for it. What it means monetarily is well explained in a letter to the *Canadian Dairyman and Farming World*, by the Wm. Davies Co., who say:

> There is an enormous amount of poultry shipped in from the country scalded, for which we are unable to realise sometimes within three or four cents a lb. of what we can get for dry picked stock. We have been trying for years to educate the farmers to dress their poultry to meet the requirements of the city trade, and have been in part successful, although there are still tons of it coming along in very poor condition. By careful handling the farmers could realise hundreds of dollars more profit during the year.

Chicken Mortality.

Evidently the *bête noir* of the poultry breeder—namely, infantile mortality in the brooder-chickens—is making itself felt at the Antipodes. In the last number to hand of the *New Zealand Poultry Journal* an editorial calls attention to this question, in which various recommendations are made, all useful and desirable, more especially in what is stated about the use of immature stock as breeders and the necessity for green food and pure water, as well as cleanliness in brooders. English experience, however, has shown that these are not enough. Development of the natural vigour by exercise has proved more efficacious in prevention of death in the early days of chickenhood than anything else, and it is for that reason that the dry-feeding system has been adopted so largely in this country.

Raising the Wind.

The Christchurch (N.Z.) Poultry, Pigeon, and Canary Club deserves credit for adoption of a novel method of augmenting its funds. One of its vice-presidents, Mr. W. W. McKinney, is stage manager of the Christchurch Comedy Club, and at the time the mail left he was organising a performance at the Theatre Royal on anniversary night, the receipts from which were to go entirely to the Poultry Club. *Verb. sap.*

South African Poultry Journals.

Two new publications are announced from Cape Town, namely, *South African Feathered Life* and *South African Feathers*. Hitherto South Africa has only had one paper devoted to poultry interests, although the general newspapers have given considerable attention to this subject, so that there would appear to be room for more.

A Colonial on English White Leghorns.

Mr. F. L. Hadfield, of Johannesburg, who was at the Dairy Show in October, writes in the *South African Poultry Journal* his impressions. Speaking of the White Leghorns, he says:

> Now for the much-discussed Whites. Only eight cockerels and fourteen pullets faced the music. When I cast back my memory to the long rows of lusty, straight-legged, active birds of ten years ago that always came up so well at the Dairy, my feeling is one of regret. The cockerels this year are very large, but loose-jointed and lanky, while instead of the fine full tail demanded in the standard the tails of these birds seem to apologise for being there at all. Pullets were certainly much better than the cockerels, being of nice shape, although very big; but all, except the actual winners, of both sexes were lanky and weak-kneed, most objectionable points in Leghorns.

Penguin Eggs.

Penguin eggs are found in large quantities on the islands off the South African coast, and are consumed to a considerable extent in Cape Colony. Trial shipments have been sent to Britain, and successfully. As the price is 4d. to 6d. each, they are food for the rich, although we saw some offered the other day in a West-End shop at 2d. each. There is every appearance of this trade increasing if adequate prices can be obtained.

Advancing Prices in New Zealand.

Mr. D. D. Hyde, Chief Poultry Expert to the New Zealand Government, is recorded as saying: "Years ago I predicted that the time would come when the farmer and the producer of poultry would receive not less than 1s. per dozen for eggs. At that time the idea was laughed at, but in order to show that my prediction was correct I have only to refer you to a letter shown me in which it was stated a Dunedin firm had offered 1s. 2d. per dozen for eggs all the year round. For the eggs secured at the egg-laying competitions both at Blenheim and at Lincoln a price equal to 1s. 2½d. per dozen was obtained. The reason why these prices are being realised is because the eggs are guaranteed to be fresh, whilst most of the farmers do not obtain such a price simply because so many of them send in eggs that are of a doubtful nature in the matter of freshness."

Why Eggs are Dear in British Columbia.

A writer in the *Canadian Poultry Review* gives the following reason for the high prices obtained for eggs, referred to in another note, in this colony: "One would wonder why fresh eggs should be such a price on the coast, especially where they have so mild a winter, ice very seldom forming thicker than a half inch, but as both Vancouver and Victoria are large marine shipping centres, the boats take all the cold storage products, leaving the British Columbia people the better goods."

Poultry in Mozambique.

Mr. F. T. Nicholson, secretary of the Inter-Colonial Agricultural Union of South Africa, has recently visited the Province of Mozambique, and in his report to the Governor-General says with regard to one section of that country: "Here, as in other places, poultry were found to be doing well, and Mr. Pimentel had introduced some European varieties from Natal, which had greatly improved the common stock. As usual, however, all were allowed to mix indiscriminately, and consequent deterioration will soon make itself manifest. I have visited no part of South Africa where poultry thrive better than in this district."

Natal Notes.

From the last number to hand of the *Natal Agricultural Journal*, published by the Department of Agriculture in that colony, we cull the following interesting items:—"Lately eggs have been coming on to the markets in large quantities, this being the plentiful period of the year, and the result has been, of course, low prices, ranging from about 8d. to 1s. 2d. per dozen. Whilst the time of the year has much to do with the plentiful supplies, the increasing interest which is being taken in poultry-rearing is having a considerable influence. What we want now is organisation, and in this connection we direct readers' attention to the excellent suggestions which Mr. Tinson puts forward in the paper on co-operation in the poultry industry to which we give extended notice elsewhere in this connection. Mr. Tinson's idea is that a number of district co-operative egg societies should be formed in the colony for the purpose of collecting eggs from farmers and poultry-keepers in each district, grading and testing these eggs and forwarding them to the best markets. These district societies would be affiliated to a central organisation which would 'exist as advisory, filling the necessary requirements in the way of development, instructing, organising, and giving strict attention to the markets and the bringing of producer and retailer into closer touch.' The poultry industry is now certainly in need of some organisation, in order that the best returns may be obtained from the possibilities which the colony possesses. For this purpose Mr. Tinson's suggestions are excellent and we commend them to the attention of our readers."

"A poultry farm (at Cedara, Natal) was organised during the winter of 1907 with small breeding pens of five varieties of fowls. Unqualified success has attended the first season's work and, after stocking the farm with some two hundred birds, we have been able to cover the original outlay by the sale of breeding stock and eggs for incubation. Success at the Conference Poultry Show held in Maritzburg, which comprised two cups and a gold medal, the former including that for the best bird on the show, has materially assisted towards the establishment of a reputation for the farm."

PRACTICAL POULTRY-BREEDING IN THE TRANSVAAL.

MR. EDWARD BROWN, F.L.S., sends us the following extract from an interesting letter he has recently received from a correspondent in the Transvaal:—

"After two years in the veldt I discovered that our so-called fowl sickness, which is so destructive here, was simply anæmia, caused by a lack of the mineral constituents found in the soils and foodstuffs in European countries. The Government had to admit that I was right and gave me a formula for the eight missing 'salts'—magnesia, sulphur, iron, limestone, or chalk, blue ash, calcium fluor, and charcoal, are the materials which compose this formula, as modified by me. The result is that poultry sickness is a thing of the past.

"I have raised 300 chicks this year (winter) in a

Petaluma incubator and a brooder house—three hatches, seven weaklings destroyed in each hatch, the whole of the balance are strong and splendidly grown; no disease of any sort or kind in eight months among eighty-five laying hens. This is the healthiest country in the world for poultry and ducks. I have had no losses from sickness for the past six years on and off in the veldt. Every strong chick lives and flourishes. We have ants here by millions on every farm, supplying all the nitrogenous matter for nothing, beyond the trifling labour of fetching the ants on a wheelbarrow. The chicks themselves are passionately fond of them, and the ant food is a marvellous egg producer. I fed ants every morning to eighty-five hens in confinement, and found the feeding value so high that I had to reduce the grain given in the scratching shed to 2 oz. per diem per hen, or soft-shelled eggs were laid. This was unknown here, and another breeder's hens were listless and suffering from fatty degeneration when I saw them. The brooder house is essential owing to heavy rains in spring and the violent falls of temperature after sunset, not to mention wild cats, stink cats, and jackals. The cost of brooder oil is trifling, as the temperature here at night is 65 degs. and at midday 85 to 90 degs. In winter the temperature seldom falls belows 50 degs. at night, and rises to 83 degs. in the day. I speak of this valley. On the high veldt you get light frosts, but hot days. There is no rain in the winter months, and the climate is then ideal for hatching chicks.

"In consequence of the extreme dryness of the climate I find we can put moisture in the trays of the incubators from the first day. The difficulty is to get sufficient circulation of air in the machines.

"The following figures may interest you. Cost of food per hen per month on this plant, 4½d.; percentage hatches, ten hatches hens, 53·59; ducks, five hatches, 62·32; cost of production per chick up to three weeks, including incubator and brooder oil, 2d. each; eggs laid, 85 hens, June, July, August and September, 2,122; stock, mongrel farm hens; disease, nil; mortality, nil, except weakling chicks destroyed as stated.

"All the chickens raised are from common hens mated with White Wyandotte sires (Steinmesch strain, St. Louis, U.S.A.). The results are remarkable, about 80 per cent. of the chicks throwing to Barred Rock type. The mothers were all black. These chicks averaged 1 lb. weight each at six weeks and were running in the cattle kraal and stables. The long grass, six feet high, gives abundance of cover and animal life. It is a paradise for the chickens. The bulk will go 6 lb. at six months. I give the salts twice a week in bran and mealie meals, one tablespoonful.

"I have bred common ducks here to go 5¾ lb. at nine weeks. I am now erecting a good plant, brooder house, incubator room, and fowl houses, 12 by 12, with scratching sheds attached 12 by 12; open fronted houses are essential here or the birds die. Eggs fetch 3s. per dozen in winter. All my pullets will start laying April and May (winter, May to August). Ducklings fetch 1s. a pound and cost about 10d. each to raise to nine weeks. I shall breed the pullets back to their White Wyandotte sires next year."

NEW SOUTH WALES LAYING COMPETITION.

THE report of the sixth annual test held at Hawkesbury Agricultural College, N.S.W., is to hand. This is specially interesting, as some of the pens entered for 1906-7 were kept for a second year. The lot of six Langshans which were at top twelve months ago proved to be the final victors with a grand total for the two years of 2,487, or an average of 414½, a remarkable result. The following table compares the average number of eggs laid per hen by the different breeds during the first and second years respectively:

Breed.	Eggs per hen. 1st year.	2nd year.
12 Langshans	210·6	138·5
6 Cuckoo Leghorns	190·1	153·0
6 Buff Leghorns	196·0	158·3
48 White Leghorns	201·2	144·8
6 Buff Orpingtons	182·6	161·0
12 Brown Leghorns	191·8	128·5
54 Silver Wyandottes	179·6	127·1
6 White Wyandottes	169·1	120·1
72 Black Orpingtons	187·7	115·7
6 Rhode Island Reds	166·6	123·0
6 Buff Wyandottes	165·5	118·8
6 Minorcas	170·8	123·6

These figures support fully the claim made that a hen is most profitable as a layer in her first season.

The single year test of 1907-8 finds the White Leghorns victors, with a total of 1,474, or an average of 245·46, and all the first eleven lots are of that breed. The breed averages are as follows:

Breed.	Eggs per hen.
138 White Leghorns	195·0
18 Minorcas	177·0
96 Black Orpingtons	169·2
6 Andalusians	165·8
60 Silver Wyandottes	160·2
6 Buff Leghorns	159·3
6 Langshans	149·5
6 Black Hamburghs	144·5
12 Buff Orpingtons	133·5
12 Brown Leghorns	131·4

It is interesting to note that only two pens laid eggs weighing less than 2 oz. each.

SPECIAL FEATURES.

Particular attention is called to the following:

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FANCY AND PRACTICAL POULTRY-BREEDING IN BELGIUM.

By LOUIS VANDER SNICKT (of "Chasse et Pêche").

HALF-A-CENTURY ago the breeding of birds of all kinds, such as Budgerigars, Australian Finches, Doves, Quails, Pheasants, Waterfowl, Fancy Pigeons and Poultry, was universal in Belgium. Nearly every house had its aviaries, or small enclosures with water. The Zoological Gardens of Antwerp and English dealers at that time sold the greater part of these birds, and their products were disseminated all over Europe. But with the improvement of inter-communication the Belgian market has been flooded by the dealers of Marseilles and other ports, and foreign birds have lost their rarity and value, so that their breeding has died out. The Homing Pigeon fever killed the production of pigeons for fancy, for the table, and for sport. As a result many fanciers extended their aviaries and poultry houses, utilising them for Bantams and large ornamental fowls, chiefly of the Dutch and French races. The Zoological Gardens of Antwerp introduced directly from China the large light-coloured Shanghais, and from Japan the Nanghasakis, now called Japanese in England. M. Geoffroy St. Hilaire, of Paris, sent us the Yokohama and Phœnix. The Zoological Gardens of Ghent bred on a large scale Buff Cochins and Silver Dorkings. At the beginning of the year 1860 the Société Linnéenne instituted its annual shows of flowers, fruits, vegetables, fishes, birds, pigeons, rabbits, poultry, &c. I, myself, won a large number of medals and diplomas with all kinds of poultry hatched from eggs obtained from the late Mr. James Watts, of Birmingham.

At the time named differences of opinion arose between fanciers and practical poultry breeders, just the same as is now the case. Our country people did not appreciate fancy or foreign races, because, when kept in the ordinary farmyards, they were unable to find their own food. If fed by hand they did not repay in eggs and flesh their food cost, and, moreover, they often introduced all sorts of diseases previously unknown in the country. The Belgian peasants value a pigeon for the money it can make in the homing contests, a hen for her marketable eggs, a cock for his success in fighting. Otherwise they are worth just what they will sell for table purposes.

The light Shanghai cocks were called single-combed Brahmas d'Anvers, and have been used by producers of the famous Poulets de Bruxelles for crossing with the old breed known as the Coucou de Malines, itself an enlarged Coucou de Flanders with very white legs and skin, especially bred for fattening. That breed continues in great favour in the more fertile districts, where it can be raised and fattened in three to three and a half months. On the arid but warm, dry, and sheltered lands, where they can do no harm and may be grown until they are five and six months old, the enlarged Malines have been crossed again with the Combattant de Bruges, and have produced the Turkey-headed Malines. That new breed retains, I believe, the world's record for flesh production. Some specimens have been known to put on weight at the rate of 1 kilo ($2\frac{1}{4}$ lb.) per month until five months old.

Standard breeding of poultry was introduced into Belgium in 1884, when British fanciers came over and exhibited their selected specimens at Ostend for the first time on the continent of Europe. I am sorry to say that up to the period named—with the exception, perhaps, of Antwerp and Uccle Bearded Bantams—line breeding was not applied in Belgium. The birds were simply picked up in the country and sent to the shows as they were. After the Ostend show, at the King's desire, breeders were informed by the directors of the Department of Agriculture that the Government was disposed to make grants for the extension of poultry-breeding, and suggested that a society should be formed with authority to act with the central authorities. Thus was founded the Société Centrale. Rivalry ensued between Antwerp and Ghent, and ultimately the Federation Nationale des Sociétés d'Aviculture de Belgique was established on August 31, 1898. From that time onward breeders devoted their scientific knowledge, intelligence, time, and money to the development of fancy, practical, and industrial breeding alike. As soon as it was known that Government money was to be distributed, a host of new aviculteurs appeared, not with the object of contributing to the progress of

poultry-breeding, but to secure a part of the money for themselves or their friends.

The aims of the federation, as stated in the statutes, are to encourage the different branches of aviculture, and specially to develop the Belgian varieties and such foreign breeds as can be advantageously introduced into the country. Sums of money are appropriated to societies who organise farmyard competitions or give instruction in this subject. The shows promoted are international and local. The amount distributed for farmyard competitions is regulated in accordance with the importance of the district. A special committee grants certificates to teachers, and annually about seventy-five courses of five lessons each are instituted. The federation also keeps a list of qualified judges. The programmes of shows must receive the approval of the president and secretary. The federation considers charges of fraud or dishonest practices made against members or judges, and, if these are proved, pronounces temporary or permanent disqualification. It appoints committees charged with studying the best methods of feeding, fattening, &c., and it is hoped to establish a centre for teaching poultry-keeping. It issues marking rings and adds money prizes to those secured by the ringed specimens. It keeps the general stud book, and patronises the poultry sections of agricultural shows.

MAMMOTH INCUBATORS AS USED IN THE UNITED STATES OF AMERICA.

By PROFESSOR J. E. RICE, Cornell University.

THE building of mammoth incubators in the United States is on the increase. There are now at least seven of these large hatching machines in use in the State of New York alone. So far as I have been able to learn through correspondence, and, in three instances, by personal inspection, the large machines are proving, as a rule, quite satisfactory when properly managed. The chief advantages are economy of time in handling the large machines, less danger from fire, less expense for fuel, less trouble on account of dangerous gases, formed by the combustion, where many oil-heated lamps are used, and greater purity of the air due to not using up the oxygen in the incubator cellar, as compared with the heating of incubators with lamps.

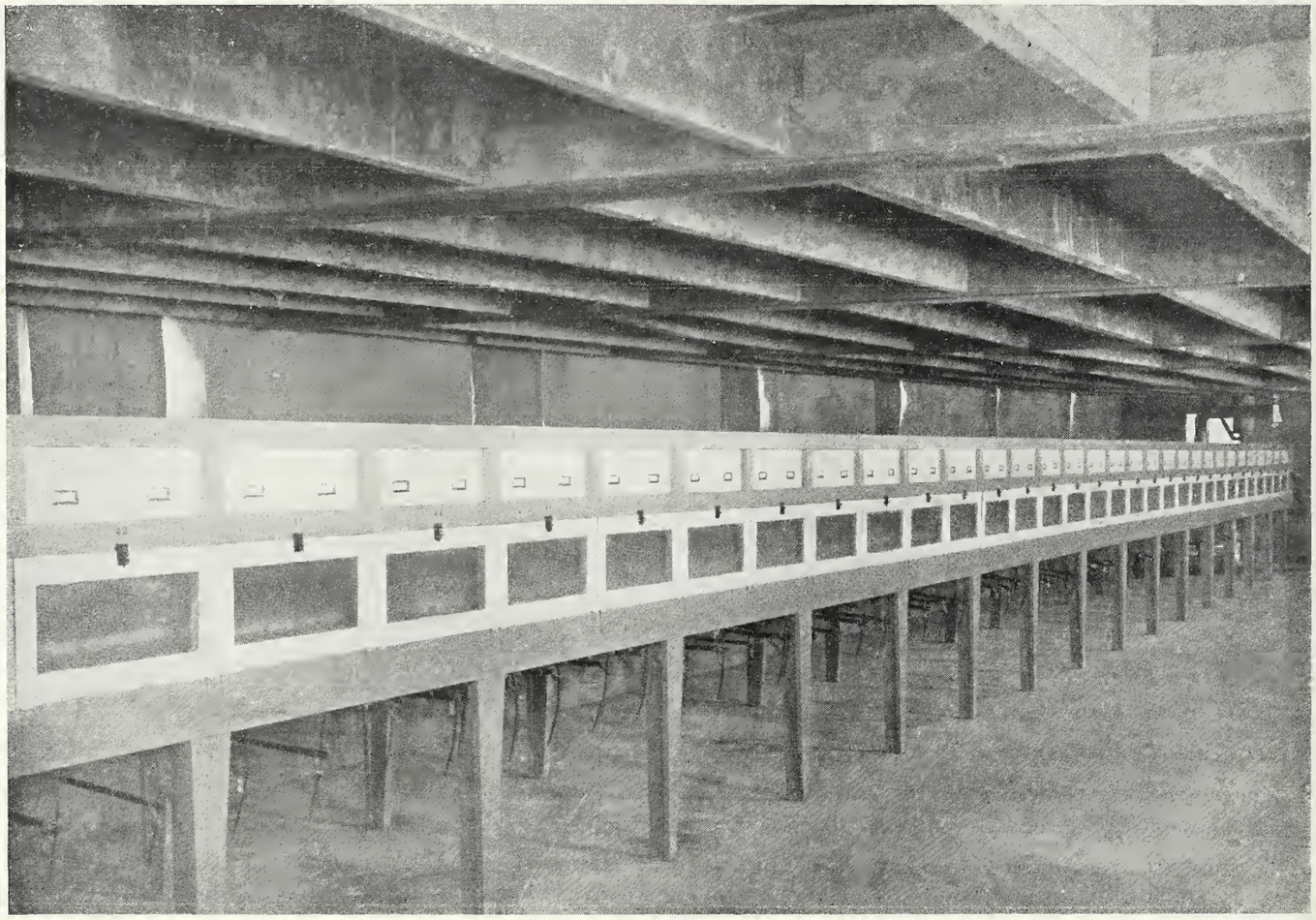


Fig. 1.

Six of the machines above alluded to hold, approximately, seven thousand eggs each. One holds twenty-eight thousand duck eggs or thirty-two thousand hen eggs. Figures I. and II. show general and detailed views of the "Hall" machine, which is heated by a

Fig. 2.

system of hot-water pipes. The regulation of the temperature is adjusted by various valves and thermostats connecting the incubator with the boiler and by the raising or lowering of the egg trays as shown in Figure II.

Figure III. is a view of one of the latest mammoth hatching establishments to be constructed in this country. This is built of concrete blocks, has a large rotunda containing egg rooms at the entrance, with sleeping apartment for the attendant above. Figure IV. shows the left aisle in the hatching cellar. The right aisle is similar. The machines, in this instance, are in two tiers and can be entered from either side, which greatly facilitates the turning of eggs, removal of newly-hatched chicks or ducklings, disinfection and general care. These mammoth incubators are arranged in three series; that is to say, are heated by three separate heating systems. In each instance the heating is done by hot water pipes. At the far end of the incubator building is the boiler room, separated completely by a solid wall partition from the incubator cellar proper. I understand, indirectly.

Fig. 3.

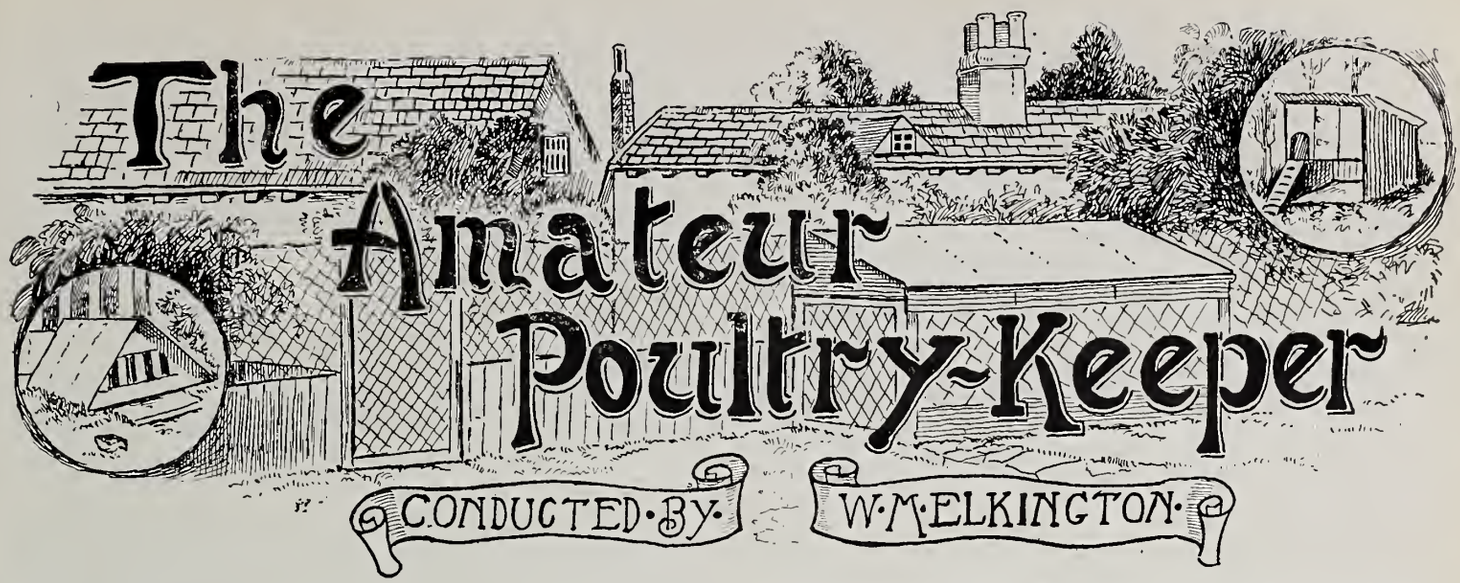
Fig. 4.

that this mammoth hatching enterprise has proved successful in the hatching of ducks during the past season, which is the first time it has been tried.

While it is self-evident that these mammoth machines can only be used on a few of the largest poultry establishments of the country, the tendency for small poultrymen to send their eggs to the large hatcheries for incubation at three or four cents a piece for the chickens hatched, or at about half the price for each egg incubated, is growing. This is due, no doubt, to the desire to avoid the first cost of purchasing a number of small incubators, the labour required to handle them where the farmer's chief occupation is not that of keeping fowls, and also, to a large extent, to avoid the danger from fire because of the fact that insurance companies, as a rule, object to insuring houses in which incubators are operated.

Whether or not the mammoth incubator idea and the hatching of large numbers of chickens at central points, to be shipped as day-old chicks to various parts of the country, will continue to grow it is impossible to predict at this time. There are several difficulties in the way, one of the chief of which is the possible danger of injury to the chickens in transit from various causes, such as chilling, smothering, delays, &c. At present this special feature of the poultry industry seems to be gaining in favour. It is quite likely, however, that for many years to come the great bulk of the chickens hatched will be by the poultry men themselves through the medium of large machines constructed to meet the capacity of their own plant. It is more likely that these plants will have incubators constructed to be heated from a central system. In other words, the general trend is toward the simplifying of hatching and the reduction of the first cost of the investment and economy in the handling of the machines.

Poultry are very plentiful in Madagascar and, although consumption has increased very largely since 1895, the prices after a rise came down again. The *Revue de Madagascar* says that chickens, ducklings, geese, and turkeys do well in nearly every part of the island. The natives fatten fowls with great success. The native hens are poor layers, and it would be advantageous to introduce new breeds. The duck industry around Tananarivo should afford the best results, if the sale of yolks to tanners and of the white used by albumen manufacturers is taken up. It may be mentioned that Indo-China exports annually 215,000 kilos (215 tons) of egg yolks and 36,000 kilos (36 tons) of albumen.



Early Chickens.

I believe the general tendency among those who have not had much experience in rearing early chickens is to coddle them. Now, it is perfectly true that the winter is not the natural season for hatching and rearing chickens, but to suppose that young birds cannot live out of doors in January and February is a mistake and likely to lead to unsatisfactory results, because there is more danger in rearing indoors than out of doors. I am referring more particularly to stock intended for laying and breeding, and as a general rule I have found that indoor rearing is of very little assistance to the amateur. By indoor rearing I mean keeping the chickens entirely in a greenhouse, an outhouse, such as stable or barn, or even in a cellar, where I have once seen chickens reared. It would be quite another matter if an open-fronted shed or hovel could be utilised, for in such a case we get shelter with the natural temperature, and the birds run out into the open whenever the weather is fine. But the drawback to coddling indoors is that when once begun the puzzle is to leave it off. Sooner or later the birds must go out of doors, and the longer they have been kept under cover the more severely will they feel the change. By rearing out of doors, with reasonables helter, we harden our chickens, and when better weather comes they make progress far more rapidly.

Why Hens Don't Lay.

If all the hens that might lay were only given a fair chance I verily believe that the national foreign egg bill might be reduced by one half. There are many reasons why hens do not lay—many because they are hatched too late, others because they are bred from degenerate stock; but among amateurs' fowls an appalling number fail to lay because they are not fed and managed in a way likely to promote egg production. There are innumerable theories and formulæ for feeding fowls treasured by advanced poultry keepers, but for the amateur there is nothing better than the simple plan of scalding biscuit meal and then mixing it up and kneading it with sharps to form a crumbly mass. This makes an appetising food, and is as good as anything for egg production when meat is given in some shape or form. Some samples of biscuit meal contain granulated meat, and this can be added to any extent, but personally I prefer to give animal food in another form, and get my butcher to supply me with lights and other offal once or twice a week. Then for the evening feed I recommend wheat and oats in summer, and wheat, oats, and maize in equal parts in winter, the sample to be the best in the market and not the cheapest. This is just a simple diet for amateurs, but it will produce eggs as well as many more elaborate

Foods and Feeding.

Many times when I have recommended certain foods—oats, for instance—people exclaim: "Oh, but my fowls won't eat oats!" I am aware that it is rather a difficult matter to get fowls to take to oats when they have not been used to them, but it only requires a little tact and patience, unless the birds have been spoiled by too generous feeding. This happens in a great many cases, I am afraid, birds being given such a quantity of food that when a change is made and something is served to them that they do not fancy they find it no hardship to refrain from feeding for a meal or two. This raises the question how much food should be given to poultry, which has puzzled amateurs from time immemorial. Unfortunately, however, one cannot lay down any hard and fast rules in this matter, because one must discriminate between large fowls and small, heavy eaters and light eaters, layers and non-layers. But approximately I should say that, when a hen is not laying, a small handful of food twice a day is quite sufficient, and if she has an unlimited range I should not even allow her that. On the other hand, when a hen is laying regularly she requires plenty of good food and I should give her just as much as she seems anxious for.

Buying Eggs for Hatching.

This is frequently regarded in the light of a gambling transaction, and in these days of Black Wyandottes, Blue Leghorns, and other wonderful breeds, I am very much afraid that in many cases it is nothing better. Nevertheless, if one chooses a good standard breed and purchases eggs from a reputable breeder, there is invariably a fair chance of securing a moderate

return, together with a very much slighter chance of drawing a good prize. To those who understand the rearing and management of exhibition fowls, the purchase of a sitting or two of eggs from some good breeder is an investment I am rather partial to; but on no account can I recommend an amateur to think of making a start as a fancy breeder in that way unless he is in a position to ascertain the pedigree of every chicken he hatches. He may get a bird that may win him a few prizes, or realise a substantial sum; or he may hatch something useful for his breeding pen; but when it comes to making a commencement as a breeder I would rather spend the money on a trio of birds mated by a reputable fancier, and know what I am breeding, than adopt the uncertain plan of trusting to what I could hatch from purchased eggs.

Bantams.

The interesting article which Mr. Wm. Hems, himself a successful amateur breeder, contributes to this issue will, I hope, induce many people whose accommodation is not sufficient for the breeding of large poultry to go in for these interesting little birds. The Bantam breeder has several advantages over the fancier of large poultry, one being that, whilst the entry fees and prizes are generally the same, he can send his birds to shows for a comparatively trifling cost, four birds in a compartment hamper travelling at the same price as one large fowl. One can scarcely take the utility value of Bantams into consideration, for neither the birds nor their eggs are marketable, though they are welcome in the home; yet, after all, there are many among us who do not regard a fowl merely as something to eat.

BANTAMS FOR AMATEURS.

By Wm. Hems.

I HAVE often wondered why more of our cottage friends, as well as those people who have only a small garden at their disposal, have not taken up Bantams as a hobby, and I cannot help thinking that if they only knew the pleasure to be derived from rearing these interesting little pets a great many more would go in for them.

It is a mistaken idea to imagine that Bantams require a large place in which to live, for, providing they are kept scrupulously clean and are carefully fed, they will do remarkably well in very small pens, and if the amateur has a small plot of grass at disposal movable pens about 3 ft. long (divided into a run and small house) will be large enough for a pair of clean-legged Bantams or a couple of pullets. Feathered-legged birds will require rather more room, but in any case wooden floors should always be provided to the house part in which the birds sleep; the pens can be moved each day, and in this case the ground will remain fresh for several seasons and the grass be much improved thereby.

Of course it is not absolutely necessary that Bantams should be provided with a grass run, as a small lean-to house, say 3 ft. square, with a covered run twice as long and the same width, should very well accommodate a cock and three hens.

The chickens from the majority of our different breeds of Bantams are, with proper care and attention, hardy little mites, and when kept dry and properly looked after will thrive in almost any small garden.

The choice of the Bantams to be kept must be left to the discretion of the amateur, but whether the choice lie with one of the many beautiful varieties of Game or charming Variety Bantams (and by a Variety Bantam I mean one other than Game) by all means start with a good pen, and the best way to do this is to place yourself in the hands of a reliable breeder of Bantams who will supply you with a pen properly mated to breed something worth looking at. Never buy a bird from this place and another from that, simply because they are cheap, for in all probability the result will be that you will be greatly disappointed by breeding nothing but rubbish.

In my opinion it is much more satisfactory to buy a pen of birds than a sitting of eggs, for you do see what you are paying for with live birds, but with eggs one is often disappointed with the result.

This will apply equally whether the amateur intends keeping his pets simply at home or exhibiting his birds at shows, and I may say, by the way, that I believe the amateur who takes up Bantams for exhibiting will find it a most fascinating and instructive pastime. The mere fact of training and preparing one's birds for exhibition should prove a matter of keen enjoyment, to say nothing of seeing your birds in the show pen with a first, second, or third prize card stuck through the wires.

For my own part I must say that, although I admire each and all of the many beautiful varieties of Bantams, none in my opinion comes up to the stylish Rosecomb, and whether it is the black or white variety, few Bantams, I think, are so attractive either in the show pen or in their runs at home.

In my case many of my Rosecombs are kept in small movable covered-in pens, about 3 ft. long by 2 ft. wide, and 2 ft. 6 in. high in front sloping down to 1 ft. 8 in. at the back, each pen consisting of a house 1 ft. wide, with a run 2 ft. wide. The whole of the front of the sleeping house consists of the door, in which a small window is inserted, and the run is boarded up six inches high, the remainder of the front being wire netting covered with unbleached calico. The house part has a boarded floor kept covered with fine peat moss or sawdust, and the birds pass into the covered run through a hole in the partition.

My cockerels are placed in these pens as soon as ever they are fit to leave the hen, either in pairs or singly, and I find they do not fight as they would if left in a flock, and by keeping the cockerels in these small pens they are much tamer than if housed in large pens or at liberty, besides which they are much more easily handled and trained for the show pen.

The breeding pens consist of lean-to covered-in structures boarded eighteen inches high in front and the remainder covered with wire netting, in each of which is a sleeping house, the floor of the pen being covered several inches deep with dry leaves, earth, peat moss, or chaff. Some of my pens are connected with a grass run, to which the

birds have access on fine days, and the other pens have food supplied them each day. In the pens the hard food is scattered among the leaves, &c., to give the birds exercise.

The feeding of poultry is at the present time quite a vexed question, and of course this applies equally to Bantams—some fanciers advocating the dry feed system, others preferring a proportion of soft food; and, while it is true that the hard-feathered varieties of Bantams do not require a large amount of soft food, it is equally true that soft food must be given to the soft-feathered varieties to produce the extra amount of feather required.

For my own part I find that when Bantam chickens are hatched by a hen the chickens are best left undisturbed for at least twenty-four hours, excepting

Garden Runs.

to remove the broken shells from the nest. Let the first feed then consist of hard-boiled eggs chopped fine (shells as well), mixed with coarse oatmeal, and given every two hours, and continued for the first two or three days; for the next few days, as a soft food, boiled rice may be given, and to cook this properly the rice should be put into a basin of milk, or milk and water, the basin being placed in a saucepan of water and the rice steamed until the grains have swollen to their fullest extent without adhering to one another; the grains should then be rubbed in oatmeal until dry. The feeding may now also be varied with bread soaked in milk and squeezed as dry as possible, and for a change liverine or biscuit meal may be used. For dry food a mixture of canary seed, millet, broken peas, rice, and wheat is the best, and this should be given alternately with the soft food. Particular care should be taken that the soft food should never be sloppy, and that all food should be placed in troughs or on pieces of board, only sufficient food being given for each meal.

Adult Bantams may be fed on any of the foods I have mentioned, but the great secret in keeping them in health is to ring the changes as much as possible in feeding and to keep them clean and dry, not forgetting a plentiful supply of grit and green food.

If the little matters I have mentioned are carefully attended to, the amateur will be well repaid for the care and trouble he has taken with his pets, and we shall all be proud, I am sure, of the Bantams of Amateurs.

HOW TO MAKE A BACK-YARD RUN.

By A. T. Johnson.

In these days the common back-yard hen is a very much more important creature than she used to be. No longer is she the disconsolate wretch condemned to live on the refuse of the dust-bin. And the thrifty housewife who feeds her on tea-leaves and broken lamp glasses—with orange peel and raisin pips for a change at Christmas—no more receives our sympathy if she complains of the unprofitableness of her flock. Even the semi-detached residence at the end of the garden or yard is no longer a melancholy-looking hovel, an offence to neighbours and a prey to every prowling sanitary inspector. It is true that there may be a few surviving relics of these vermin-haunted premises left in the dark corners of the poultry world, and, if that be so, let them be speedily demolished and something better, cleaner, and healthier erected in their places.

It is my intention here, however, to give the town or village poultry keeper a few hints as to how best to make a house and run for a few fowls in a given space. But as everybody's back-yard or garden varies in shape, aspect, or other particular, one cannot do more than give the amateur a general idea as to what to aim at in erecting his house and run. In the first place, I may say that the idea of an open run (that is, one uncovered to the sky) can only be entertained where the ground is very dry, the slope or drainage good, and the space large. In fact, I never recommend the use of such a run unless it can be made large enough to divide into two, so that one side may be cropped while the other is being occupied. It is only thus that it can be kept pure and wholesome, for a grass run, under the circumstances, is out of the question. But with a smaller run, covered over and with a hard floor, matters are much simplified, for not only is such a one more easily cleaned but it is more hygienic, and, in proportion to its size, can take more birds than an open one.

The amateur may, therefore, in most cases decide upon having a roosting house and run under one roof. He may make them any size he likes so long as he remembers that not less than twelve square feet of run are allotted to each fowl, the roosting compartment,

under such conditions, being rather less than half the size of the run. The type of house generally selected for these small runs is what is known as the "lean-to," and it is, for convenience and economy, usually placed against a wall at the end of the garden, with the higher side of the roof to the back. Now, a moment's thought will convince anyone that the latter arrangement is a wrong one, for the roof of a house so placed will effectually prevent any sun from entering and the interior is most difficult to ventilate. A slope from back to front is very well in a vinery or cucumber frame when the sun can pass *through* the roof, but in a lean-to poultry house it is just the reverse. The sun beats on the roof in summer and nearly bakes the hens, and in winter, when it is most wanted, they get scarcely any rays at all.

Moreover, when using a house with the high front, the attendant is spared the infliction of a back-ache every time he wishes to enter, not to mention sundry bumps on the head and raindrops down the neck. Both house and run are under the one roof, and all sides save the front must be closed so as to avoid through currents of air. The front portion of the roosting place should be boarded one-third of the way up and fitted with a sliding, adjustable shutter, but that of the run need only have woodwork to a height of 18 in. from the floor. The remainder of the open part must be covered with fine-mesh wire netting. If the swing shutter is not used, oiled canvas or sacking blinds should be placed on the outside all along, to be drawn down in very severe weather so as to throw off driving rain and snow. They will well repay the little trouble and trifling cost that they involve, and to keep fowls comfortable and the litter dry is not "coddling."

Perhaps the most important part of any such house and run, and one that must be given the first attention, is the floor, which must be both dry and rat-proof. Cheapness, consistent with durability, is what we all want, and one of the best floors that ever I saw was made as follows. The earth was dug away from a space about one foot wider than the house and shed, each way to a depth of 1 ft. This was filled with old rubble and builders' refuse, and after being beaten down firmly covered with a layer of coarse gravel. Over this some fine mesh wire netting was stretched and so cut that it overlapped with about 12 in. to spare on every side. Then on the top of that a strong layer of asphalt made of tar, pitch, coarse gravel, and lime was laid. When dry the house and run, built on a strong bottom frame, were placed on the asphalt, and the overlapping edges of wire-netting were drawn up all round and stapled to the woodwork. That was a cheap floor, thoroughly rat-proof and dry, and as durable as granite. The house which it supported was not, of course, in part formed of the adjacent wall, and this for many reasons. In the first place, a garden wall or boundary fence is often irregularly built, or so made that it is impossible for one to utilise it as part of a wooden lean-to, and yet keep all dry, draught-proof, and free from rats. If the surface of a wall is cemented and made to form the back wall of the house, it often serves its purpose well, but it is doubtful whether it will be cheaper than wood in the end. Then a wooden house and run standing on the asphalt may always be removed by the tenant, if need be, whereas difficulties may arise over the matter, were it fixed to the wall by plaster of any kind, such as cement.

A house that slopes towards the back should have a wide eave and a gutter to carry off rain-water, and this important point is much more easily managed with a house that has its own wooden back standing a few inches away from the garden fence.

Anywhere where wood is cheap the amateur carpenter can put up a house such as I have briefly described without detailed directions, which often make wearisome reading. But I will say this, that unless material can be obtained at a moderate price and time is no object, it is cheaper to buy the parts of the house in sections, and any good appliance firm will supply exactly what is required from measurement. But for the guidance of those who would like to put their own house up I would advise 2 by 3 quartering for frame and uprights and ¾ to 1 in. boards (tongued and grooved). The skeleton of quartering must be made first, and all boards nailed on the *outside* perpendicularly. The roof may be of the same material, felted and tarred (the tar should be applied hot and have 1 lb. of dissolved pitch added to each gallon), or it may be made with very thin matching covered with corrugated iron. The latter should not be used without a lining of wood or felt. Use the best, heavy gauge, wire netting (1 in. mesh) for the open part, and make the nests so that the attendant can get at them by means of a lid from the outside. The perches must be movable, resting in slots, and they are best quite round and about 2 in. in diameter. Flat perches cause crooked breasts, "duck feet," and twisted toes. A "dropping-board," sprinkled with sand, should be placed under the perches so as to prevent the excrement dropped during the night from getting among the litter, and it should be movable also. In warm and sheltered places the partition between the house and run, in which a door is fitted, may have the upper part of its highest corner of open wire-work, but in the north it may be entirely closed, the window (with adjustable shutter) at the front being sufficient for ventilation and light. A run, such as I have described, to hold six or seven birds (the size of Minorcas), should be 7 ft. by 12 ft. on the ground, 6 ft. high at the front, and 3 ft. 6 in. at the back. The roosting accommodation ought then to be about 4 ft. in width, the other dimensions being, of course, as above.

Mortality in Laying Competitions.

The official report of the Twelve Months Laying Competition of the Utility Poultry Club discloses a death-rate among the competing birds that cannot be considered as altogether satisfactory. In a collection of 120 fowls, selected for stamina and strain, carefully fed, and housed on approved hygienic lines, one scarcely expects to hear at the end of twelve months that so many as a dozen have died from disease or accident. Such a total, estimating each bird at the moderate value of five shillings, represents a loss of £3, which should be set down against the profits derived from the eggs. The South Australian Competition showed a much better result. There were but nineteen deaths in a period of *two* years among 450 pullets and hens, and many of their losses came about through the intense heat, an unknown detrimental factor with us. It may be urged in the Utility Poultry Club's Competition that five of their losses were sustained in one pen through a contagious endemic disease. But it might be asked why was Pen No. 11, in which between March and September five birds died from tuberculosis (including two substitutes to fill death vacancies), permitted to continue in the competition? It should be now sufficiently well known that tuberculosis among poultry spreads largely by the dissemination of germ-laden excrement, and when in March three out of the seven birds in that pen (including the cock imported in January, by which the disease was probably introduced) were found to be stricken, two of which died in that month, the obvious course for the management would have been to disinfect and seal up Pen No. 11 and return the surviving competitors as disqualified. If the conditions of the entry did not admit of this, future competitions should contain in their rules a clause empowering the committee to act. The retention of the infected survivors not only resulted in further deaths, but was attended with risk to all the other competitors, and had the disease been one such as roup, where the contagion is much more virulent and easily conveyed from pen to pen, we can easily conceive that the competition might have come to a disastrous and abrupt termination.

The Cleansing of Coops and Brooders.

The opening month of the New Year is a busy one for the poultryman and a period of unusual bustle and activity. With many fanciers, as well as utility breeders, it dates the actual commencement of the hatching season, and to all it brings the reminder that it is high time to set about preparing for it. The breeding-pens have long since been mated up with anxious care, the strain decided on, the eggs garnered, and often even the incubators ready to yield their chirping harvest before a thought is given to the brooders or coops. Then perhaps it is remembered that these have never been touched since they were packed away in some cellar or barn at the close of last season, dirty, unpainted, and with lice-laden feathers in their crevices. For feathers alone, as a writer has recently told us in these columns, are sufficient to nourish a colony of poultry lice for many weeks. The cleansing and renovating of the brooders and coops are therefore duties that should on no account be overlooked or put off until the last moment, for, unless there is thoroughness here, rearing is sure to be attended with disappointment and losses. Brooders should be carefully looked over, their woodwork examined for defects from warping, hot-water tanks and lamps tested for leakages, and old curtains or any materials likely to harbour the eggs of lice removed and replaced by new ones. Wooden floors must be thoroughly scraped and brushed over with hot limewash, and all interior woodwork washed or sprayed with a solution made by steeping half a pound of fresh quassia chips in a gallon of boiling water for one hour, afterwards straining off and adding half a pound of soft soap. This solution can also be used for cleansing chicken coops previous to lime-washing them. After both coops and brooders have been dried and opened up to sunlight and air for a couple of days the outsides can be painted when necessary. A word of warning will not be out of place as regards some preservative paints now being largely advertised. If any of these are used, care must be taken to expose the newly-painted coops to the open air for some days before occupation, and in the painting of foster-mothers one cannot be too cautious in the choice of the preparation; indeed, it is always wise to run a newly painted brooder for several hours with the lamp going, in order to dry off any fumes caused by the warming of the wood. We have known of an instance this summer where a number of chickens, more than a month old, were found dead the morning after being placed in a cockerel coop freshly treated with one of

these preservative paints, although the pen was well ventilated and placed in the open air.

Feather-Eating.

This objectionable habit is common among poultry that are penned in close confinement; hence suburban fanciers are called upon to deal with the trouble more frequently than are those whose poultry have a wider range. But confined runs are not alone at fault, for the fact is that many different causes conspire to promote the habit of feather-eating. That it is begotten of idleness there can be little doubt, and a pen of young chickens kept almost exclusively cooped up, with a natural curiosity to peck at everything and anything handy, will soon discover that the stubs of growing feathers are soft and succulent, and learn to pick them just as easily as a child learns to bite its nails. In the same way adult fowls become addicted to it, and generally the pernicious example is set by one or two of these, the rest learning by imitation. When the culprits can be convicted on evidence they should be at once removed from the others, and unless of particular breeding value, may with advantage be consigned to the cook. The irritation of lice or the heating of the skin by improper food during the moult are often also the starting-point of the tendency, and when found to exist these influences are, of course, to be met by appropriate remedies. But perhaps the most common cause of the craving is a lack of sufficient animal food and of the salts of potash and sulphur in the diet allowed. The treatment then is a complete change of food for a few days; and a diet almost entirely of oatmeal, chopped meat, cabbage, and chopped onions, with no grain but oats, will be found effective. With the morning mash can be mixed some flowers of sulphur and bicarbonate of potash, in the proportion of a teaspoonful of each to every ten fowls. As a local application, we have found it useful to dust the skin and feathers with sulphate of quinine, mixing it with three-parts of insect powder to make it go further. The bitterness will help to cure the depraved taste, and continued attention to diet will prevent its recurrence.

POST-MORTEM EXAMINATIONS.

We have made arrangements by which post-mortem examinations of poultry and game can be effected for our readers upon the following conditions:

1. *The specimen is to be forwarded postage or carriage paid and securely packed to "Biologist," 297, Trinity Road, Wandsworth Common, London, S.W.*
2. *The fee of 2s. 6d. (stamps will not be accepted) must be remitted with each specimen and a letter giving particulars of feeding and housing, or any symptoms which were observed before death.*
3. *Birds should on no account be addressed to the office of the paper. If forwarded there they will be returned to the sender.*

It is recommended that specimens be despatched by parcels post where practicable and as soon after death as possible. A reply will be received by letter, defining the disease, its cause, treatment, and prevention.

The Month's Trade.

As generally is the case, trade is sluggish in poultry just before Christmas, buyers apparently holding off. Prices for poultry during the past two months have maintained rather a monotonous level. At the time of writing fairly large supplies of turkeys are being received from Ireland, France, Italy, and Austria-Hungary. The quality of these birds, however, leaves a great deal to be desired, probably due to the fact that the best are being reserved for Christmas. Grouse are now out of season, but a plentiful supply of pheasants has made up for their loss. Taken on the whole 1908 has been a very good year for the poultry industry, a high average of values being realised. Last spring produce of first-rate quality realised record values, at one period cold stored American poultry selling at one shilling and sixpence per pound.

Imports.

The imports of foreign poultry, game, and eggs, during November show a considerable increase over those received during October. The quantity of eggs received is the greatest yet recorded for November, while poultry and game are slightly below that received during the corresponding period of 1907, the figures for the last three years being as follows:

	Month Ended November 30.		
	1906.	1907.	1908.
	£	£	£
Eggs ..	748,853	694,877	790,248
Poultry ..	35,515	38,628	35,959
Game ..	13,543	14,826	14,521
	£797,911	£748,331	£840,728

The value of colonial and foreign butter received this year up to November 30 last amounted to no less a sum than £21,973,690, of which Denmark supplied £9,980,260, Russia £3,275,308, France ranking third with £2,074,531 to her credit. Sweden, the Netherlands, and, New Zealand were credited with sending £1,299,029, £1,221,216, £1,093,077 respectively.

The value of cheese received during the same period amounts to £6,262,968, of which Canada supplied over two-thirds, viz., £4,290,228 and New Zealand £752,972, the Netherlands ranking third with £592,578 to her credit.

TABLE POULTRY AT THE SMITHFIELD CLUB SHOW.

THERE were 235 couples of various descriptions on view at the Agricultural Hall during the two days allotted to the above section of the Smithfield Club Show in the second week of December, and of that number there were very few to which exception could be taken on the score of size or quality; although one of the judges has frequently expressed a personal preference for naturally fattened poultry, both he and his *confrere* were well pleased with the general character of the exhibits as a whole. In common with the expressed opinion of many practical expert visitors, we were able to follow the judging in most particulars, although the old difficulty of a large crowd in a very confined space did not always give the opportunity for close comparisons. Surely some improvement could be effected in this respect, and the educational advantages of such a display enhanced by the possibility of really seeing the exhibits. We know that many people this year would not face the crush, despite their evident desire to learn what they could from the methods of the section.

Among the principal winners were included such well-known names as Mrs. Bruce-Ward, Mrs. Paynter, Mrs. Gillard; Messrs. W. A. Smith, R. H. Hibbs, A. Brooker, F. H. Baxendale, Sam Cornford; the Rev. Hartop-Holt, and Lord Rothschild.

The Dorking classes were not very well filled, and upon the whole the quality of the pullets was preferable to that of the cockerels; some of the latter being rather spoilt in appearance by the presence of undrawn dark stubs. The quality of the Old English Game was rather disappointing, and pullets won first and second places in competition with cockerels, the sequence being repeated in the Indian Game class. There were some good Langshans, although the class as a whole was uneven. The Black Orpington class only attracted three entries, but there were two good couples belonging to one exhibitor; and although there were over a dozen couples in the Buff class the quality of none was more than fair, and the appearance of some had been badly spoilt in preparation. Plymouth Rocks and Wyandottes were small classes, but included a few good birds—particularly the winning cockerels of the latter.

The class for any other breed included a couple of red Sussex cockerels that well deserved the cup awarded their exhibitor, Mr. F. H. Baxendale, whose poultryman's skill has secured many honours recently; the very fine texture and colour of these birds attracted general admiration. In the classes for cross-breeds there were only three couples in the

A PAIR OF PRIZE BUFF ORPINGTONS. [*Copyright.*

O.E. Game-Dorkings, but the Indian Game-Dorkings included another cup-winning couple of cockerels—the property of Mrs. Bruce-Ward—excellent specimens of size and quality. The entries were fairly full in the class for "any other cross breed," a variety of crosses being represented, of which the best were Dorking-Buff Orpington, Indian Game-Buff Orpington, and Game-Sussex. The two classes for "Farmyard Fowls" were well filled, and the quality of most was fairly even, the cup in this section going to a couple of pullets exhibited by Mrs. Paynter. Guinea fowls were short as regards entries, but the birds exhibited were good.

for geese was awarded to a fine couple of pure bred Embden ganders shown by Mrs. G. Gillard, who is well-known as a successful exhibitor; whilst Mr. A. Gillard's Embden-Toulouse geese received the reserve card. They evidently know something about geese in Devonshire, although the excellence of the exhibits as a whole proved that the ability to breed and fatten these birds to perfection is not confined to the west country. Mrs. F. Read, who carried off the cup last year, exhibited a splendid couple of Embdens (geese) but they were not quite good enough against the couple previously mentioned. The display of turkeys was numerically about the

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A CONSIGNMENT OF EAST ANGLIAN TURKEYS.

The ducks attracted considerable attention and included some excellent specimens, but although size has been the keynote of many recent duck shows it is questionable whether in some instances the birds have not been made too fat. Mr. Sam Cornford added to his many past successes, taking a series of prizes and the cup for the best exhibit in the three classes—the cup winners being a couple of Aylesbury-Pekins, whilst a couple of Rouens received the reserve card for that honour. It is noteworthy that the cup went to cross-breeds; nevertheless there were some excellent examples of pure breeds—Aylesbury, Pekin, and Rouen. In contradistinction to the foregoing, the cup in the two classes

same as last year, and the quality and size throughout were really excellent. Without exception the birds were of the Bronze variety, and, except in a few instances the texture and colour were first class, whilst there was very little evidence of unnecessary fat. Lord Rothschild was much more successful than was the case last year, taking the cup with a superb couple of cock birds and the first and reserve with a couple of hens. Mr. R. H. Hibbs was also successful with some very excellent couples in both classes.

During the second day there were the usual demonstrations of dressing for market and trussing for cooking, boning, &c.—practical instruction that always draws an interested crowd.

TABLE OF PRICES REALISED FOR HOME, COLONIAL, AND FOREIGN POULTRY, GAME, AND EGGS DURING DECEMBER.

ENGLISH POULTRY—LONDON MARKETS.

Description	1st Week. Each.	2nd Week. Each.	3rd Week. Each.	4th Week. Each.
Surrey Chickens	2/6 to 4/6	2/6 to 4/6	2/9 to 4/6	2/9 to 4/6
Sussex ,,	2/6 ,, 4/6	2/6 ,, 4/6	2/9 ,, 4/6	2/9 ,, 4/6
Yorkshire ,,	2/0 ,, 3/6	2/0 ,, 3/6	2/3 ,, 3/6	2/0 ,, 4/0
Boston ,,	2/0 ,, 3/6	2/0 ,, 3/6	2/3 ,, 3/6	2/3 ,, 3/3
Essex ,,	2/0 ,, 3/6	2/0 ,, 3/6	2/3 ,, 3/6	2/3 ,, 3/3
Capons	—	—	—	—
Irish Chickens	1/6 ,, 2/6	1/9 ,, 2/9	1/9 ,, 2/9	1/9 ,, 2/9
Live Hens	1/6 ,, 2/3	1/6 ,, 2/3	1/9 ,, 2/4	1/9 ,, 2/3
Aylesbury Ducklings	—	—	—	—
Ducks	2/6 ,, 3/6	2/6 ,, 3/6	2/9 ,, 4/0	3/0 ,, 4/0
Geese	4/6 ,, 7/6	5/0 ,, 6/6	5/0 ,, 7/6	5/6 ,, 7/6
Turkeys, English	—	—	—	—
,, Irish	0/8 lb,,0/10	0/8 lb,,0/10	0/8 lb,,0/10	0/8 lb,,0/10

ENGLISH GAME—LONDON MARKETS.

Description.	Each.	Each.	Each.	Each.
Grouse	1/3 to 2/6	2/6 to 2/9	3/0 to 3/6	1/6 to 3/3
Partridges	2/0 ,, 2/6	1/0 ,, 2/6	1/0 ,, 2/6	1/0 ,, 2/6
Pheasants	2/0 ,, 2/3	1/9 ,, 2/3	2/0 ,, 2/6	2/0 ,, 2/6
Black Game	—	—	—	—
Hares	1/9 ,, 3/0	2/0 ,, 3/0	2/0 ,, 3/0	2/0 ,, 3/3
Rabbits, Tame	0/10 ,, 2/0	0/10 ,, 2/0	0/10 ,, 2/0	0/10 ,, 2/0
,, Wild	0/6 ,, 1/1	0/6 ,, 1/0	0/6 ,, 1/0	0/6 ,, 1/0
Pigeons, Tame	0/6 ,, 0/6	0/6 ,, 0/6	0/6 ,, 0/6	0/6 ,, 0/6
,, Wild	0/6 ,, 0/10	0/6 ,, 0/10	0/6 ,, 0/10	0/6 ,, 0/10
Wild Duck	1/6 ,, 1/9	1/9 ,, 2/3	1/9 ,, 2/3	2/0 ,, 2/6
Woodcock	2/6 ,, 3/0	2/0 ,, 3/0	2/0 ,, 3/0	2/0 ,, 3/0
Snipe	1/0 ,, 2/0	1/0 ,, 2/0	1/0 ,, 2/0	1/0 ,, 2/0
Plover	0/9 ,, 1/0	0/9 ,, 1/0	0/9 ,, 1/0	0/9 ,, 1/0

ENGLISH EGGS.

Markets.	Per 120.	Per 120.	Per 120.	Per 120.
LONDON	17/6 to 20/0	17/6 to 20/0	17/6 to 20/0	17/6 to 20/0
Provinces.	Eggs per 1/-	Eggs per 1/-	Eggs per 1/-	Eggs per 1/-
MANCHESTER	5 to 6	5 to 6	5 to 6	5 to 6
BRISTOL	1/6 per doz	1/8 per doz	1/9 per doz	1/10 pr doz

FOREIGN POULTRY—LONDON MARKETS.

Countries of Origin.	Prices Realised during the Month. Chickens. Each.	Ducks. Each.	Ducklings. Each.	Geese. per lb.	Turkeys. per lb.
Russia	1/3 to 2/6	—	—	0/5½ to 0/6½	—
Belgium	2/6 ,, 4/0	—	—	—	—
France	—	—	—	—	0/8 to 0/10
United States of America	—	—	—	—	—
Austria	1/4 to 1/8	1/9 to 2/3	—	0/5½ to 0/6	0/6½ to 0/7½
Canada	—	—	—	—	—
Australia	—	—	—	—	—

FOREIGN GAME. LONDON MARKETS.

	Price Each During Month.
Capercailzie	2/3 to 2/6
Black Game	1/6 ,, 2/0
Ptarmigan	0/11 ,, 1/0
Partridges	1/0 ,, 1/9
Quail	0/10 ,, 1/3
Bordeaux Pigeons	0/10 ,, 1/4
Hares	2/3 ,, 2/6
Rabbits	0/7½ ,, 0/8½
Snipe	1/0 ,, 2/0

IMPORTS OF POULTRY AND GAME. MONTH ENDING NOV. 30, '08.

Countries of Origin.	Declared Values Game.	Poultry.
Russia	£76	£10,272
Belgium	235	14,752
France	36	9,227
United States of America	—	300
Other Countries	14,174	1,408
Totals	£14,521	£35,959

IRISH EGGS.

Description.	1st Week. Per 120.	2nd Week. Per 120.	3rd Week. Per 120.	4th Week. Per 120.
Irish Eggs	12/6 to 14/6	— to —	— to —	12/6 to 14/6

FOREIGN EGGS.

Description.	1st Week. Per 120.	2nd Week. Per 120.	3rd Week. Per 120.	4th Week. Per 120.
French	14/0 to 18/6	14/6 to 20/0	14/6 to 20/0	14/6 to 20/0
Danish	15/0 ,, 18/0	15/0 ,, 18/0	15/0 ,, 18/0	15/0 ,, 18/0
Italian	12/6 ,, 15/0	12/6 ,, 15/0	12/6 ,, 15/0	12/6 ,, 15/0
Austrian	9/0 ,, 11/0	9/0 ,, 11/0	9/0 ,, 11/0	9/0 ,, 11/0
Russian	9/6 ,, 10/6	9/6 ,, 10/6	9/6 ,, 10/6	9/6 ,, 10/6
Australian	—	—	—	—
Canadian	10/6 ,, 10/9	10/6 ,, 10/9	10/6 ,, 11/0	—

IMPORTS OF EGGS. MONTH ENDING NOV. 30, '08.

Countries of Origin.	Quantities in Gt. Hund.	Declared Values. £
Russia	980,653	399,417
Denmark	277,570	165,371
Germany	215,003	87,589
Belgium	130,110	59,519
France	57,490	27,198
Canada	23,082	11,631
Australia	—	—
Other Countries	94,502	39,523
Totals	1,778,410	£790,248

SATURDAY ON THE MARKET.

By Verney Carter.

SATURDAY is clearing up day, the markets being practically deserted by the usual buyers. After nine in the morning it is customary with many of the salesmen to carry on a retail trade with the view of disposing of the many oddments they have left on their hands after the week's sales. In the poultry industry, as in other classes of production, there is sure to be a certain percentage of produce which does not attain to that standard of excellence which it is necessary it should, if it is to command a ready and remunerative sale. In the fruit and flower trade especially is this the case, and the problem of disposing of the inferior quality of produce has been solved by the salesmen encouraging a cheap coster trade, but this solution does not give entire satisfaction, as florists and fruiterers complain of being undersold by the street hawkers.

The custom of retailing goods upon a market intended for wholesale purposes only is undoubtedly for many reasons open to objection. The problem is, How is the custom to be done away with, and, if done away with, how is this inevitable surplus of inferior quality—"throw-outs," as they are termed in the poultry trade—to be dealt with ? It must be disposed of in some manner, as it is not possible for the salesmen to keep carrying it forward to the next week, and neither would it pay to place it in cold storage.

From enquiries made of some of the salesmen it appears that whenever they have endeavoured to dispose of this surplus to the coster fraternity the prices offered by them were too low for the salesmen to give satisfaction to the consignor. Hence arose the custom of retailing on Saturdays on the markets, which now through long custom has become to a certain extent a recognised thing. With the exception of Christmas week the markets usually close shortly after midday, but on Saturdays they are kept open till eight o'clock in the evening, being freely patronised by the artisan class, who welcome the opportunity of purchasing something cheap and a little out of their ordinary fare as a relish for their Sunday dinners.

The variety of choice, especially at this period of the year, to be found on the markets is truly astonishing, and it is not possible to find anywhere else in London so many bargains. Chickens from America, Russia, Hungary; game from all parts of North-Eastern Europe and Manchuria, ranging even from a lark to a lordly Capercailzie, from a rabbit to a Roe-buck are to be secured. Rabbits, hares, and poultry, however, appear to be the most popular. Many are the workmen and work-wives to be seen going away loaded and contented with their bargains. They do not seem at all fastidious as to whether the chickens or rabbits are a bit old so long as they are of a good size and will provide a substantial meal for their children, who are looking forward to their Sunday dinners. So, perhaps, there is not so much harm done by retailing on a wholesale market after all. The great thing for poultry producers to do is to avoid sending consignments that will arrive on the markets on Saturdays ; if they do, they are likely to remain unpacked until the following Monday.

The question arises whether it is not desirable that English producers should not make some effort to market their third and fourth birds in other markets, where probably better returns would be realised, as of the secondary class of poultry the London markets have a more than ample supply from abroad. The class of birds one sees realising fair prices in the provincial markets would not meet with the same demand or realise such good prices in either the Smithfield or Leadenhall Markets.

NOTES FROM CORRESPONDENTS.

"THE SUSSEX HEN WIFE."

By S. C. Sharpe.

TO some poultry keepers it might seem strange to see batches of young chickens being put out in the fields at this season of the year, but in some parts of Sussex rearing for the spring market is now in full swing; in fact, on many farms they do not stop hatching throughout the whole of the year, but this is only when plenty of fresh land is available. It is, however, very surprising what some people do in the way of bringing up large numbers of chickens on a few acres. I could point to several here in the eastern part of the county, who rear and fatten a few on a very limited space. Generally speaking, the fattener does not rear many chickens, as his time and space are taken up in collecting and fattening the birds he buys. The smaller man may run a few cows or sheep, rearing his chickens on the same land, relying upon the cows cropping the grass down short and so keeping the land sweet and clean. I know of one small farmer who has only five acres, and yet he keeps cows, and rears annually from 1,500 to 2,000 chickens, every bird of which he crams and sells either on the London, Brighton, or some other South Coast market. Occasionally he secures some private custom which, I understand, pays him better because carriage and commission are thereby saved. I have known this man for over eight years, and I can say that every season he rears not less than the 1,500; this year he has gone a little over the 2,000. The surplus milk he uses for cramming the chickens, and, when he has it to spare, gives it to the young chicks which are being reared. No foster mothers are used, all the youngsters being brought up by the hen. Often one can see thirty coops placed out in one of his little pasture fields (I think he has three), and he has allowed the hedges to grow high so that shelter is provided naturally. It is only fair to add that all the appliances—birds and every detail—are kept exceptionally clean, and this just goes to show how chickens may be reared thickly on one piece of land with success year after year, provided cleanliness is studied.

There are not many Sussex farmers who use incubators or brooders. They may keep a hundred hens or so and make these do all the hatching and rearing. Some of the cottagers, too, who rear a number of chickens for the higgler, keep a good number of hens, and when they start the hatching operations they put down three or four (more if they can get them) hens on eggs, and, although they do not in many cases trouble to test the eggs, they make each brood up to fifteen to twenty chicks. The hens, which are of the old Sussex type, are placed in large coops. The chickens that are being reared now seem to be doing extremely well, and I have seen several thousands during the last two or three weeks.

If a beginner takes up this branch of poultry-keeping, it is very important that he should start with the right class of fowl; something which is large of frame and quick of growth. Although Game crosses are excellent table birds they do not suit for this purpose, not being fast enough of growth. I like the Faverolle and Sussex best; they are very hardy and seem well adapted to any soil, besides having large frames; and this for cramming is what is required. Much depends upon the class of cock, or cockerel, which is used. I have sometimes seen a fine lot of large hens, like the good old dark Dorking, being mated (well, not mated, but running loose) with a miserable, undersized cockerel of no breed or type, the consequence being that chickens from such stock are quite unsatisfactory.

NOTES FROM YORKSHIRE.

By F. W. Parton.

It is very surprising that Yorkshire, along with other Northern counties, does not take up poultry fattening as a business. It is well known that the chief difficulty experienced by the fatteners in the South-Eastern counties is the paucity of the most suitable birds for this work, and one can quite understand this in centres where fattening establishments abound in such large numbers and where perhaps half-a-dozen higglers visit one farm in quest of chickens in a single day. The great difficulty in the North lies in the fact that people using the markets in our large industrial centres are not the class willing to pay 4s. or 5s. each for fowls when they have been in the habit of paying half this sum. In time, however, they may be educated up to the point of realising that chickens at the enhanced price are really cheaper than the lean, hard-fleshed specimens too often displayed for sale. It is pleasing to note that there is springing up here and there people who have taken up this work, the birds being all consigned to London, and after deducting the carriage and other attendant expenses the returns leave a fair margin of profit. I had the pleasure some time ago of being in Leadenhall Market when a crate of the Northern fattened birds arrived, and it was gratifying to notice that they compared very favourably with the best specimens from Surrey and Sussex. This goes to prove that when the work is thoroughly understood and carried out on sound business lines success in this branch of the poultry industry is not confined alone to the Southern counties.

It has been said, and we must admit with some truth, that eggs pay better than any other branch of poultry-keeping in Lancashire and Yorkshire, and consequently the production of eggs is chiefly gone in for. One class of poultry will not adequately provide for both branches, and thus fattening in many cases has to stand aside. I see no reason why fattening may not be done without in any way detracting from the more important "egg." In the populous districts of the West Riding eggs seldom, if ever, reach more than thirteen or fourteen for 1s. in the most plenteous months, while in the East, and in some parts of the North Riding, as many as eighteen go to the 1s. Why should not one section of the county specialise in eggs and the other in table chickens?

IRISH NOTES.

By Miss Macquillan.

It is interesting to observe how the popularity of the different breeds varies from time to time. Take Orpingtons, for instance. Some years ago the black and white varieties were almost entirely eclipsed by the buff, and the cup was generally won by a bird of the latter variety. But gradually the black and white again came into favour and in 1907 the buff classes in the southern shows were small and the quality was poor, the good birds of this variety in Ireland being principally in the north. This year the buff seems to be gaining favour and there is a marked improvement in the quality; but the black still keeps pre-eminence as a cup winner. The barred Plymouth Rock also seems to be regaining favour. Some years ago, at the beginning of the revival of the poultry industry, the white legged breeds got the preference as being more suitable for table purposes and the Plymouth Rock was put in the background. But time and experience having shown that the white legged breeds are more affected by the damp climate and in many situations are much more difficult to rear, the strong constitution of the barred Plymouth Rock is bringing it to the front once more. Unfortunately the buff Plymouth Rock has almost disappeared from the country, as there is now little demand for it. The Wyandotte has held its own as a popular variety for several years. The classes for the white in particular fill well and the quality is good. Some good partridges also are shown. Silver Wyandottes were fairly represented some years ago, but few of them are now exhibited in the south and the quality is decidedly poor.

Faverolles still keep well to the front and at most shows both number and quality are high. In fact, some of the Irish exhibits of this breed are as good as can be seen anywhere. Minorcas and Leghorns do not appear to be so popular as they were; the best specimens of the latter breed are to be found in the north, but very few browns have appeared this year at the shows. Indian Game are fairly well represented, and new exhibitors are often seen in this variety, which generally gets a class to itself at cup shows. Modern Game are few and far between and so are Old English Game, and like Langshans, Brahmas, Cochins, Andalusians, Houdans, Silkies, and Dorkings, they generally compete in classes when the show is confined to Irish exhibits. Duck

classes are well supported, but the quality of the Aylesburys has not improved. Indian Runners, however, show a marked advance on last year's birds; and some good Cayagas have been shown. The quality of turkey cocks has much improved, which, no doubt, is largely due to the stations held under the Department of Agriculture; but the hens are not so good as those shown in former years. Embden ganders have been well represented, the Department of Agriculture having given grants for these also; they have, to a great extent, superseded the Toulouse in the south. In Bantams the improvement on last year's birds is very great, and the classes filled well, Modern Game and Rosecombs being the most popular breeds.

By Miss Lily Murphy.

Ballinhassig Show has now become quite an important event, and the fixture of November 26 was well up to that of the previous year. The classes are confined to breeds eggs of which can be obtained at Mr. Roberts's poultry farm, and are those of general utility to the district, viz., White and Brown Leghorns, Buff Orpingtons, Faverolles, White Wyandottes, American Bronze Turkeys, Embden Geese, and Indian Runner Ducks. The entries this year were over 400, which large number is due to the fact that it has been the practice of the Department of Agriculture to send a representative to this show each year since its inception to buy birds for stocking egg stations. This year Miss D. Murphy purchased for this purpose over 150 pullets. Amongst private purchasers Mr. J. A. Tuckey claimed the largest number of exhibits.

The Royal Dublin Society's show held at Ballsbridge on December 9 and 10 may be looked upon as the least progressive show in Ireland, since the committee of management still retain their out-of-date classification and continue to relegate the new and useful breeds to the A.O.V. The entry was somewhat larger than in 1907, and the quality showed in many classes a decided improvement. If the Royal Dublin Society could be induced to revise their prize schedule and lower the present exorbitant entry fee, they would soon have the most popular and best poultry fixture in Ireland. As it is, the leading fanciers prefer to send their birds across the water, and most of them were conspicuous by their absence from the Ballsbridge fixture. The result is that competition is never keen, and very moderate specimens often get into the running, as happened in many of the classes this year. Turkeys were strong, and the winners of exceptional merit, Messrs. Abbott Bros. taking well-deserved premier honours in every class. The first prize in the class for dead turkeys fell to a magnificent specimen from Tring Park, and was afterwards claimed at auction by a poulterer at the excellent price of 50s. Lady Dunleath won in the class for cross-bred chickens (dead) with a finely finished pair of Indian Game—Buff Orpingtons, while in the class for pure breds Miss Egan, of Limerick, staged the winning pair—a beautifully fatted pair of Light Sussex. These latter sold for 14s. at the auction—a good figure as Dublin prices go.

Whether Irish chickens can be fatted so as to return a decent profit has often been debated. The question seems to have been very fairly decided by Mr. and Mrs. George O'Grady, of Coachford, co. Cork, who have quite a large fattening establishment, and do a trade that is increasing by leaps and bounds. The idea grew out of the successful attempt to fatten and market some surplus cockerels, and, before they had quite realised it, these good fanciers found they had made for themselves a thriving business to the great benefit of the surrounding district. Mr. and Mrs. O'Grady very wisely keep pens of the breeds best suited to the cramming pen, and so the proper material is being spread broadcast over the district. Mrs. O'Grady looks after the exhibition side of the concern, and puts her birds down in faultless trim. The first exhibits of crammed fowls from the establishment created a mild sensation at the Coachford show, and again at the recent Cork show, where they, so to say, walked off with the prizes. A tribute to pluck and energy, the Coachford Utility Poultry Farm teaches a lesson that might well be copied in other parts of Ireland.

NOTES FROM WALES.

By A. T. Johnson.

The practice of buying lean goslings in autumn to run on the stubble and subsequently fatten for the Christmas market appears to be growing in popularity among the farmers, but whether it pays them is quite another matter. The prices which these birds are offered at by Lincolnshire and Irish breeders may sound tempting enough, but the quality of the stock is often of the poorest, and, not infrequently, some very ancient stagers are included in the lot! If these goslings were purchased earlier in the year, say in July, and sold off as "green," "stubble," or "Michaelmas" geese a very respectable profit might be made, but for the small farmer to burden himself with twenty or thirty hungry mouths, which begin by clearing off the gleanings of the stubble and then demand heavy feeding before they can be made respectable enough to grace the Yuletide board, seems to be a custom utterly unjustified. Perhaps it is well that no books or balance-sheets ever trouble the farmer's mind in this matter, for they would reveal some discomforting facts.

Poultry produce, excepting, perhaps, chickens and ducklings, has been exceptionally scarce the last few weeks. "Local" supplies of geese at Christmas were below the average in most parts, and nearly all the turkeys came from over the border or from Ireland. Why the Welsh farmer, who has a climate and soil eminently suited for rearing turkeys, does not go in for the business is a problem. Eggs, just before Christmas, were five for 1s. in many rural districts. Even in the cheapest markets 1½d. each was the ruling figure, and they were very hard to get at that.

THE WEST OF ENGLAND APPLIANCE WORKS

PROBABLY every poultry keeper who buys a house or a brooder speculates at some time or other how these things are evolved from the raw material, and more especially how, at the present average of prices, they are made to return a profit to their manufacturer. It is obvious that a vast amount of labour must be involved in the making of such appliances; the wood for the houses must be cut into the requisite shapes, perches and nesting-boxes must be fashioned to fit, ventilators, doors, windows, and all the minor accessories of wood and metal must be planned and carried out before the article is ready for use. How then—for what may often be termed a ridiculously small sum—can a cheap house or brooder be made, that will give satisfaction to the purchaser thereof? The answer to this question is to be found only in a study of the modern machinery by which up-to-date appliances are produced, and of the methods adopted by some of our best-known appliance makers. Among the latter stands Mr. Randolph Meech, a pioneer in the manufacture of cheap houses, etc.; and a visit to his factory at Hamworthy Junction, a mile from Poole, is full of instruction for the student of this important branch of the poultry industry.

Mr. Meech's premises are on high ground overlooking Poole Harbour—that vast estuary to which come thousands of ships with many kinds of cargo, more particularly cargoes of foreign timber for the several yards hereabouts. It was the freight facilities of Hamworthy that partly influenced Mr. Meech when he transferred his rapidly growing business from Broadwindsor to the Poole district; and one may note that during the first year here a saving of no less than £400 was effected on freight alone. He purchased thirty-five acres of land on this spot, and though, one need hardly say, the whole area is not required for his works, they cover a very large space of ground. The impression received at the first sight is that of a village of low corrugated iron buildings, disposed, as any other village would be, in regular streets and open spaces. Closer examination reveals the plan of the premises, which consist, roughly speaking, of the factory, including Mr. Meech's private office, and of timber sheds and storehouses which enclose it on its four sides.

These timber sheds, one of which is 150ft. long, and another 400ft.—the longest shed in Dorset—at once arrest the attention by the heaped-up thousands of wood battens and matching they contain. The battens are the "raw material," which is imported from Sweden; each measures several yards in length and is 4½in. or 5in. broad and 2in. deep. As they are required, these battens are introduced into the joiners' shop, shown in our photograph, by means of runners, and are there halved and quartered, planed, etc., by a series of cutting machines, being passed from one to another. Here we saw in use a multiple saw bench, capable of carrying six saws at one time, and of converting battens into strips at the rate of 450ft. per minute. However, it is in the large factory adjoining that the most interesting pieces of machinery are to be seen, though before passing thereto one should notice two modern "nailers" the larger equipped for driving eight nails at each stroke and the

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A TIMBER SHED 400 ft. LONG.

smaller, used for egg boxes, for four. The main factory is 150ft. by 95ft. wide, and is lighted with arc and incandescent lights when artificial light is required. First of all, we come to one of the most conspicuous implements in a double sandpaper machine, consisting of a brace of solid wheels, faced on both sides with tough sandpaper, and imbued with almost wonderful powers of friction. The end of a piece of matching held firmly against this revolving wheel dissolved before one's eyes as if it were made of putty. Another implement of great interest to poultry keepers is a machine for cutting and rounding perches out of the sections of the batten used for that purpose. In another part of the factory are another "double-disc" sanding machine, trimming saws, boring machines, planers, and so forth; while in a further wing of the building, approached through the engine-room, are two excellent machines for making matching with the minimum of labour and waste and the maximum of accuracy The first of these is an upright band saw for cutting to the required length. The second is an apparatus for cutting, grooving, and planing the matching in one operation. From this it will readily be inferred that Mr. Meech makes his own matching—less, as we venture to think, because it is very much more profitable to do so, or because he anticipates the early advent of Tariff Reform with its imposts on the manufactured article and none on the raw material from abroad, than because its manufacture is one extra outlet for his phenomenal activity!

One encounters small circular saw benches for cutting matching away from the factory. There is one in the long matching shed already referred to; we were able to secure a picture of the sawyer at his work, and to obtain, by way of testimony to the labour-saving properties of the machine, the information that 10,000 pieces a day is considered a fair result for the operator. One may interpolate here that many of the hands employed are on piece work. A useful instrument we came across was a movable saw of the same description—useful, that is to say, in that it can be moved to almost any part of the grounds, and so utilised for any odd out-door work that requires to be done. However, to describe the machines in the factory fully—even in the most general terms—would be to fill the whole space allotted to this article and a great deal more besides, and we must content ourselves with this too brief indication of their character. Neither can we linger long over the power that moves them. Shortly, it must be stated that this power is electricity, and that, in all, there are twenty-six motors employed. In the engine-room are three dynamos which supply the current for the entire mechanism; the engines

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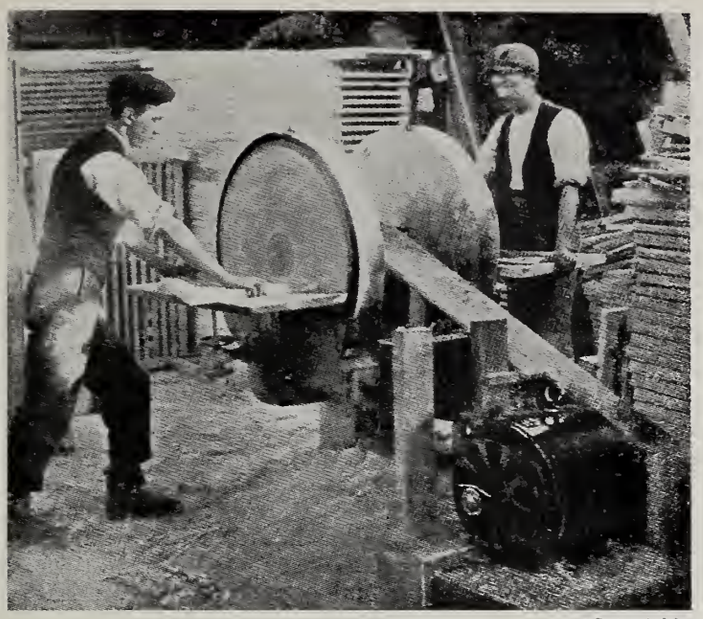
RUNNERS AT WORK.



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The Sandpaper Machine.

which drive these consisting of a 60 h.-p. "Tangye" gas engine, a "Robey" undertype steam engine, capable of developing 48 h.-p., and a "Trusty" gas engine of about 20 h.-p. The two gas engines are fitted up with a suction gas plant, thus making their own gas. When one considers that the large number of pieces of machinery in all parts of the premises are controlled by the dynamos in this engine house, it is not surprising that the connecting cables form a perfect network over—or rather under—the entire area.

The manufacture of appliances demands a great quantity of nails and other ironmongery, and a roomy storehouse is wholly occupied by a stock of these articles. All the tin accessories are made on the place, the tinsmiths' shop being one of the several secondary features of the establishment. In the warehouse, a fine and lofty shed, we observed many thousand parts of poultry appliances, arranged ready for dispatch by sea or rail at a moment's notice; the putting together of these parts being a task that the veriest tyro can manage, and the saving of freightage effected by sending them out this way being very considerable. While, however, a certain amount of the clean-looking white woodwork that we see here is dispatched direct to its purchaser, the majority of customers prefer to have their houses, etc., painted or otherwise preserved against weather and vermin. This brings us to the concluding stage in the manufacture of Mr. Meech's poultry houses—the bath in "Penetras." One of the first objects to meet one's eye on entering the yards is a large square tank containing Penetras, in which the appliances are dipped. There is nothing mysterious about Penetras; it is a straightforward concoction of a tarry nature, and it possesses indisputably—whatever else may be said about it—the property of rendering the wood absolutely immune from the attacks of insects. Creosoting comes under a rather different heading. It is a process that is applied to the battens in much the same way as it is applied to railway sleepers, and its object is to render the wood black throughout and practically imperishable. A large iron cylinder is filled as full of battens as it can be and is then hermetically sealed by the cap that fits the end at which the timber is introduced. From this cylinder and also from its wooden contents the air is withdrawn by a suction engine, and the creosote is then forced into the receptacle through another pipe by hydraulic pressure, the pressure being up to 130lb. per inch. The wood thus thoroughly permeated by creosote is then taken out and stacked in an open shed to dry for some days, since it would not do to work upon it before some of its new moisture had evaporated.

At the "West of England Poultry Yards and Appliance Works"—to give the full title—about seventy hands are employed. In view of the fact that the average output per day is about six tons of matching five and a half tons of battens this might be considered a small staff; but it must be remembered that every bit of machinery employed is of the most up-to-date and so most labour-saving character. To take a single example, the "sander" is calculated to do the work that it would require twenty men to perform in an equal time. Again, the profit realised on the appliances produced here does not admit of any superfluous expenditure in wages. In some cases, indeed, the margin is so fine that its very existence depends entirely upon the economical nature of the tool employed; we may

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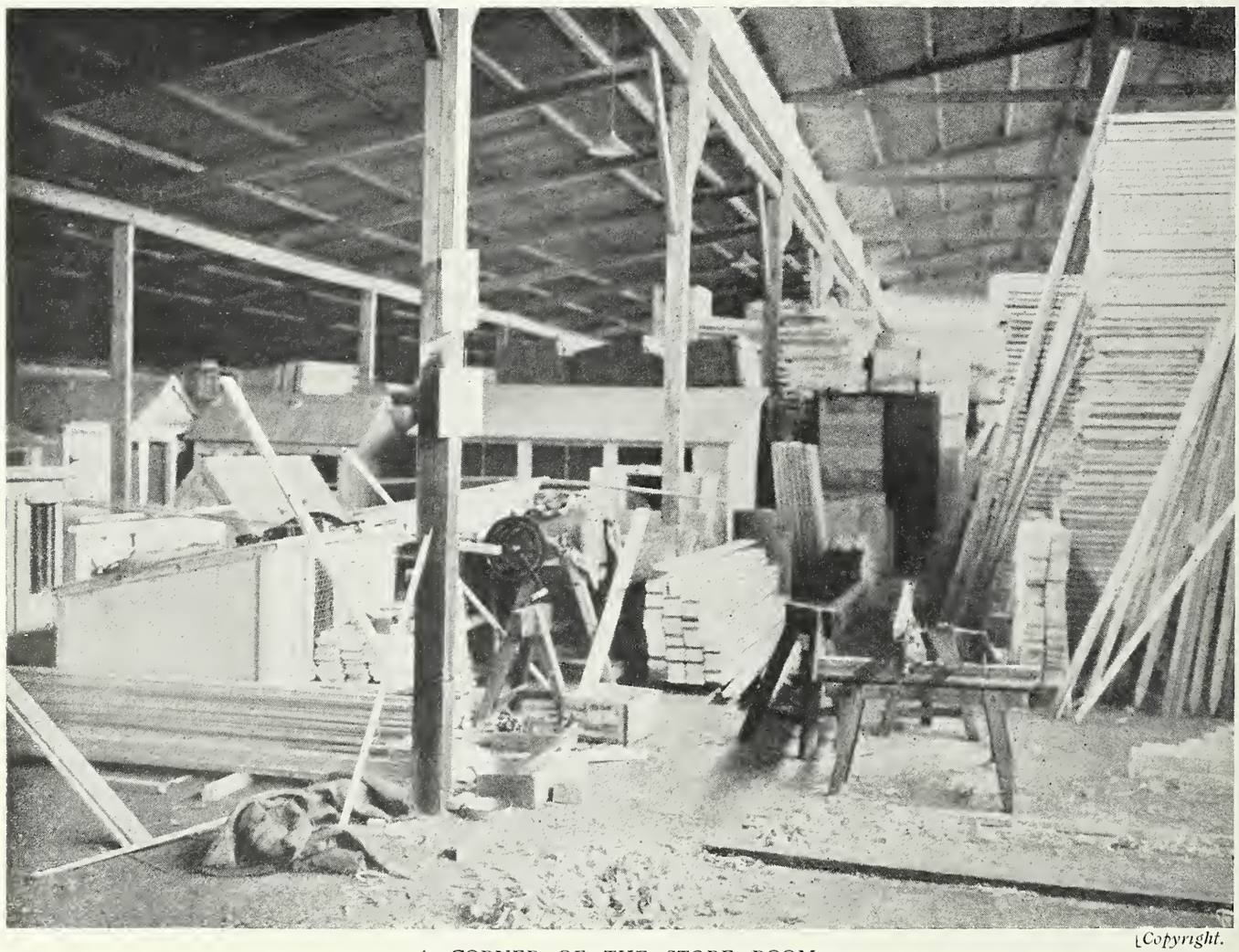
A Sawyer at Work.

instance the circular saws in use on the premises, the slenderness of which, by reducing the waste from the sawn matching to a practically irreducible minimum, is a governing factor of the profit made ultimately on that matching. In all wood-working concerns the elimination of waste is a condition that is essential to financial success. At the West of England Appliance Works the economising of waste may be said to have been raised to the status of a fine art. During a busy hour at the factory there is plenty of sawdust flying about; indeed, if one is standing near a "sander," the air seems to be full of it, and the piles of chips and dust that one notices about the cutting and planing machines are evidence of the inevitable waste product. Yet the wonder is—considering the constant cutting operations, their lightning rapidity, and the huge quantity of timber used—not that there is waste, but that there is not more of it.

With so much inflammable material in the factory, one need hardly say that every precaution is taken to obviate the risk of fire. Two fire extinguishers are fitted at each doorway throughout the establishment. Smoking is not allowed on or anywhere near the premises. Similarly, the complicated electrical system—complicated, that is, to the visitor, not to Mr. Meech, who has every detail at his finger-ends, and seemingly keeps it there without much trouble—is safeguarded in every possible direction. There are safety fuses everywhere to prevent possible injury to dynamos and motors and to minimise the risk of fire, while on the doors of the rooms where the plant, if carelessly handled, might cause an accident, are posted placards: "No admittance—keep out," the imperativeness of which ought to deter the most ignorant and the most inquisitive of intruders. In regard to ordinary breakdowns, the risk is reduced to next to nothing by the fact that, as we have already seen, the engine plant is duplicated; thus, in the event of the failure of the "Tangye" gas engine, one or more of the other engines at rest could be got to work in about twenty minutes. The importance of this is always obvious, and becomes particularly so in a busy month, such as February, when brooders have to be manufactured as fast as the machinery will let them be, in order to meet the demand.

The elaborate plant, the rigorous division of labour, the cut-and-dried standard of efficiency that must be maintained in every department; these things demand an unusual capacity for organisation and unremitted personal attention from the organiser. Mr. Meech, who has developed his big business out of small beginnings, lives at, and one might almost say *for*, the works; his business is also his hobby; and to his personal enthusiasm must be attributed a good deal of his success.



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A CORNER OF THE STORE ROOM.

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REGULATIONS.

1. The name of the Competitor is to be sent to the office for Registration.

2. The Competitor must forward the names of Subscribers obtained to the office as received. The Subscription will commence with the next issue.

3. With each Subscriber's name, 6/- must be enclosed when the paper is to be delivered through a Newsagent, or 8/- when the paper is to be forwarded by post. All Colonial and Foreign orders must be accompanied by 8/- (except Canada in which case 7/- is the amount), as arrangements cannot be made for delivery abroad by Newsagents.

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5. If two or more persons secure the same number of Annual Subscribers—which is very unlikely—the Editor reserves the right of extending the period of Competition for one month.

6. If the successful Competitor wishes to do so, he or she may nominate another person for the Prize, subject to the approval of the Editor.

7. Before the award is announced, the Competitors' Lists will be checked by Messrs. SMITH & LONGCROFT, Chartered Accountants, 41, Bishopsgate Street Within, London, E.C.

8. Should the winner live outside the United Kingdom, and elect to take No. 1, he or she would pay travelling expenses to England, or take a shorter course, subject to the approval of the Editor.

9. The latest date for receiving Subscriptions will be as follows:

United Kingdom..... March 31,
The Continent, Canada, and U.S.A. April 7,
The Colonies, &c..... April 30,

and the result will be announced in the June issue.

10. The Editor, Sectional Editors, and members of the Office Staff and Newsagents are prohibited from competing.

11. The Editor's decision must in all cases be accepted as final, and all Competitors must enter on this understanding.

SELECTIONS FROM MONTH'S PRESS.

Farm Poultry-Keeping.

For some years past many writers in the poultry Press have discussed the position of the hen in relation to the other stock of the farm, and they have pointed out the great necessity for encouraging this branch of agriculture, a minor one though it is, so that the production of eggs in this country may be able to keep pace with the demand. They have also shown how important poultry-keeping is to the small holder, the number of whom is increasing so much of late. In face of this it is interesting to read the view taken by Mr. Oscar Erf, of the Kansas State Agricultural College, in the *Bulletin*, which he has published dealing with "The Hen's Place on the Farm." Although his remarks apply more particularly to his own State, still many points which he brings forward are equally important to this country. Dealing with the question of increased production he states:

> That the great bulk of the increase comes from the general farm is shown by the fact that in the North Atlantic States, where the great poultry farms are situated, the gain in eggs produced in a period of twenty years was but 91 per cent., while in Kansas during the same period the gain was 320 per cent.

The *Bulletin* deals with all phases of the poultry industry as applied to the general farm, but we can only make one more quotation. In discussing the question "Should the Farmers have Standard-bred Poultry?" Mr. Oscar Erf says:

> From the attention which has been given to the breeding of poultry for the showroom, many people wrongly infer that standard-bred poultry is no better than mongrel stock for commercial purposes. The mongrel chicken is a production of chance. Its ancestry represents everything available in the barn yards of the neighbourhood, and its offspring will be equally varied. In the pure breeds there has been a rigid selection practised that gives uniform appearance. The size and shape requirements of the standard, although not based on the market demands, come much nearer producing an ideal carcass than does chance breeding. Ability to mature for the fall shows a decidedly practical quality that the fancier breeds into his chickens. Moreover, poultry breeders, while still keeping standard points in mind, have also made improvements in the laying and meat-producing qualities of their chickens. Considering these facts, it is an erroneous idea to think that mongrel chickens offer any advantage over pure bred stock.

The last quotation shows very plainly the difference in the line adopted by American and English fanciers

Little Eggs and Big Egg Cups.

It is a fairly general rule in all commercial transactions that as the demand and price of a given article increase steps are immediately taken to broaden the sources of supply. In India this rule does not seem to always hold good. For very many years there has been an almost urgent demand for large fowls and eggs, but anything like an adequate supply of even passable quality has never been forthcoming. In fact, it has often been pointed out as one of the anomalies of European trade with India that firms who have for years been doing an extensive

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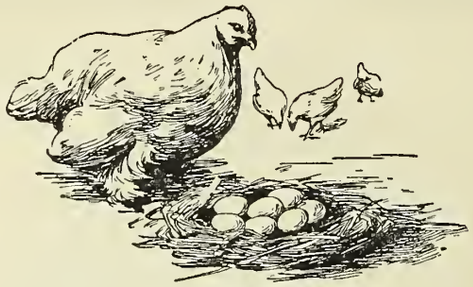

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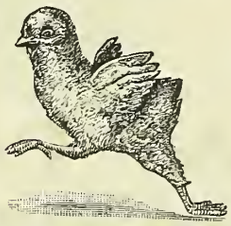

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The Poultry World Annual.

We have received from the Poultry Press, of Fleet Street, a copy of their Poultry Annual for 1909, the first of its kind, so far as we are aware, that has been compiled. The volume consists of 272 pages, and among the chief features calculated to make a special appeal to the professional or experienced breeder are the cash account, breeding register, show record, the list of poultry shows, and the biographical accounts of notable men in the poultry world. The price is one shilling net.

TRADE NOTICES.

Messrs. Spratt's Patent, Limited, have again issued an extremely attractive almanack, which will be sent to any reader of the Illustrated Poultry Record free of charge on receipt of a post-card addressed to 24, Fenchurch-street, London, E.C. A page is devoted to each month, upon which appears a really well executed picture in colours, while on the back there is some instructive reading matter describing the illustration.

We have received from Mr. Geo. Hunter, of Hull, an interesting booklet containing information regarding his well-known poultry foods, a copy of which will be sent on receipt of a post-card. Particulars of the Perfected Poultry Food, the Granulated Beef Greaves, the Meat Meal, and the Grit are supplied, together with a few notes on feeding fowls for egg production.

The following is a list of Mr. W. Tamlin's exports for November, 1908: Two 60-incubators to Mrs. Hingston, New South Wales, Australia, per ss. Pericles. Fifteen 30-incubators to Mr. W. P. Smith, Victoria, Australia, per ss. Sussex. One 60-incubator to Mr. A. C. Bullmore, India, per ss. Dunera. Twenty-one 100-incubators, two 60-incubators to Oakes and Co., Ltd., India, per ss. Blackwell. One 60-incubator to India, per order of the Army and Navy Stores. Five large "Ostrich" incubators to Woodhead, Plant, and Co., South Africa, per ss. Gaika. One 100-incubator to Mr. A. C. Love, Penang, China, per ss. Sunda. One 60-incubator, one 100-incubator to Mr. C. Smallbone, West Indies, per ss. Trent. One 100-incubator to Mr. P. E. Davies, Ceylon, per ss. Borneo. Two 100-incubators, two 100-foster mothers to Mr. P. Finnigan, Delagoa Bay, per ss. Gaika.

Recently Mr. William H. Cook, of the Model Poultry Farm, St. Paul's Cray, Kent, has shipped the following birds: Eleven Black Orpingtons to Berlin, fourteen Buff Orpingtons and ten Black Orpingtons to Buenos Ayres, one trio each of exhibition Buff, Black, and White Orpingtons to Paris, one pair each of Embden and Toulouse geese to Hanover, three Exhibition Embden geese to Paris, nine Buff Orpingtons to Germany, one cockerel and five pullets each of Buff, White, and Black Orpingtons, Black and White Leghorns, two White Orpington cockerels and ten pullets to Spain, two Black Leghorn cockerels and twelve pullets, one pen each of Buff Orpingtons, White Orpingtons, Buff Orpington

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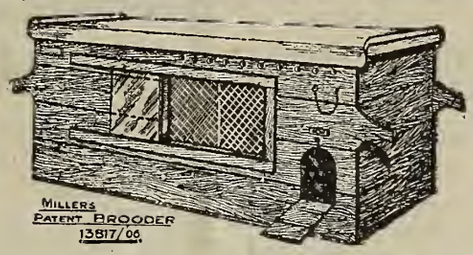

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Mr. GEORGE A. PALMER, Wykin, Hinckley, one of the foremost English Authorities on Poultry, Poultry Expert and Lecturer on Practical Agriculture to the Utility Poultry Club, The Agricultural Organisation Society, Studley College, and the counties of Worcester, Hertford, &c., after using one of my Brooders for two months, says:

June 24th, 1908.

Dear Sir,—So far I like your Brooder, and it has reared well; you are right in preferring a chamber heated by a lamp. I like it **far better than hot water pipes and tanks,** as I personally prefer the heat of a fire to steam pipes. If people will only attend to their lamps there is no fear of smell from the petroleum. **I like your sliding top,—it is absolutely waterproof,** which I cannot say of the top of some rearers. It has been out of doors in all weathers **and the lamp has never gone out.** Yours faithfully, G. A. Palmer.

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ducks, two Faverolle and two Indian Game cockerels to Pretoria, one trio of Black Orpingtons to Russia, seven exhibition Buff Orpingtons to Germany, seven White Orpingtons to France, pair exhibition White Wyandottes to Germany, one pen each of Black, Buff, and White Orpingtons to France, one trio of Old English Fighting Game for South America, one trio of White Orpingtons and one cockerel to Madras, one pair Embden geese for exhibition to France, Buff Orpington cock for Natal, a pair of Black Orpingtons to Germany, two black Orpington pullets to Paris, one cockerel and six pullets each of Black Leghorns and White Wyandottes to Spain, one Black Orpington cockerel and six pullets, six White Orpington pullets and a Speckled Sussex cock to France, one sitting each of Black, White and Buff Orpingtons to India, one Black Orpington cockerel and three pullets to Buenos Ayres.

In connection with the deputation which waited upon Lord Carrington, President of the Board of Agriculture and Fisheries, on October 29, it may be of interest to mention that the French Government voted the sum of £12,000 for the extermination of rats and mice in agricultural districts in France. Danysz virus, prepared at the Pasteur Institute, Paris, was the means officially employed. and, thanks to the timely measures taken, the farmers obtained complete and speedy relief from the troublesome pest by which their crops had been previously devastated. Danysz virus, it may be added, has been awarded a silver medal at the Franco-British Exhibition.

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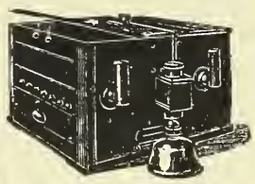

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Yorkshire Poultry Farm, Northallerton, 10/11/08.

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MR. CHARLES F. WEBB writes:

Sowerby Grange, Northallerton, 18/11/08.

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CHARLES F. WEBB.

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